UNITED STATES NAVAL OBSERVATORY

CIRCULAR NO. 103

U. S. Naval Observatory, Washington, D. C. 20390 — October 9, 1964

OBSERVATIONS OF THE SUN, MOON, AND PLANETS

SIX-INCH TRANSIT CIRCLE RESULTS

by

A. N. Adams and D. K. Scott

This *Circular* contains positions of the sun, moon, and planets observed with the Six-Inch Transit Circle during the period 1956–62. These results are provisional. Definitive results will be published later in a volume of *Publications of the U. S. Naval Observatory*.

The observed positions are geocentric and have received the usual corrections for instrumental errors, refraction, diurnal aberration, parallax, and orbital motion. The right ascensions were reduced, differentially, to the system of the FK3 by means of the FK3 stars used in determining the clock correction. Small corrections to smooth out the periodic and individual errors of the FK3 were applied to the clock corrections in deriving the published right ascensions. Since these corrections average zero, the equinox remains that of FK3.

The declinations of the night objects have been reduced to the FK3 system by applying a correction derived from the same stars that were used for the clock correction.

The sun, Mercury, and Venus were reduced with the clock correction of the nearest night tour and the nadirs taken at the time of the observation. Corrections for day minus night differences are not available at this time.

Observations of Mercury and Venus were made on the illuminated limb or on the center of light as indicated. Observations of the sun, Mars, Jupiter, and Saturn have been made on both pairs of limbs; those of Mars and Jupiter have been corrected for defective illumination. The tabular semidiameters from the ephemeris have been used

whenever a correction from limb to center or a correction for defective illumination has been applied. The moon observations were made on the illuminated limbs as indicated and have been reduced with the tabular values of the semidiameter corrected for irradiation (*Pub. U. S. Naval Observatory,* XVI, 378) and with limb corrections from the charts of C. B. Watts (*Astro. Papers Vol.* 17).

The computed positions with which the observed positions are compared were derived from the tabular values of the *American Ephemeris* for the instant when the ephemeris hour angle is zero on the meridian $5^h\ 8^m\ 15^s.849$ west longitude. No correction has been made for the difference between Ephemeris and Universal Time. Corrections for the short-period terms in nutation have been applied to the transit ephemerides for the period before 1960, when they were not included in the tabular values. The transit ephemerides of the moon are all based on the *Improved Lunar Ephemeris.* Brown's lunation numbers are indicated. The Julian Ephemeris Dates refer to the computed times of transit. The distances, in astronomical units, are those interpolated from the *American Ephemeris* at the computed time of transit.

The observers are identified as follows:

0, J. K. Gleim, 1956; F. E. Followill, 1961; F. S. Gauss, 1962; 1, J. W. Kitchens;

2, W. T. Toland; 3, S. M. Bestul; 4, A. D. Allen, 1956; B. L. Klock, 1960–62;

5, A. N. Adams; 6, D. K. Scott; 7, M. S. Kalish; 8, R. W. Rhynsburger; 9, G. E. Pease.

The values of ΔT from the Moon observations are collected by lunation means in Table I and by annual means in Table II.

ΔT is computed by dividing (O–C) by 1.002738 times the variation per hour of longitude. The weights in right ascension are proportional to the square of 15 cos δ times the variation in right ascension per hour of longitude; and those in declination are proportional to the square of the variation in declination per hour of longitude.

In order to convert ΔT from the equinox of FK3 to that of Newcomb, it is necessary to apply $+1^s.34$ to the values tabulated in this circular.

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

SUN

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
56 01 22.72	5495.22206	1		20 15 41.423	+.105		−19 47 26.44	+1.29	0.984173
56 01 27.72	5500.22290	4		20 36 36.706	+.143		−18 35 13.64	+0.52	0.984694
56 01 28.72	5501.22304	1		20 40 45.225	+.035		−18 19 44.44	+0.96	0.984817
56 02 01.72	5505.22350	0		20 57 11.655	+.061		−17 14 33.33	+1.93	0.985366
56 02 07.72	5511.22392	4		21 21 27.238	+.076		−15 27 47.96	+0.37	0.986332
56 02 08.72	5512.22396	1		21 25 26.954	−.019		−15 09 02.01	+0.59	0.986506
56 02 10.72	5514.22401	1		21 33 24.314	+.087		−14 30 45.03	+0.46	0.986864
56 02 16.72	5520.22394	8		21 56 57.622	+.172		−12 30 19.71	−0.47	0.988000
56 02 20.72	5524.22372	1		22 12 24.793	−.020		−11 05 56.55	+0.76	0.988814
56 02 22.72	5526.22356	1		22 20 04.394	+.062		−10 22 42.75	+0.31	0.989243
56 02 23.72	5527.22347	0		22 23 53.239	+.139		−10 00 50.71	+0.90	0.989463
56 02 26.72	5530.22316	1		22 35 15.723	+.052		− 8 54 23.10	+1.04	0.990152
56 02 28.72	5532.22292	0		22 42 47.893	+.056		− 8 09 25.71	−0.29	0.990634
56 02 29.72	5533.22279	8		22 46 33.153	+.039		− 7 46 44.60	+0.44	0.990881
56 03 01.72	5534.22265	1		22 50 17.927	+.030		− 7 23 56.82	+0.95	0.991131
56 03 04.72	5537.22221	1		23 01 29.382	−.023		− 6 14 57.94	+0.89	0.991901
56 03 21.71	5554.21904	0		0 03 56.047	+.080		+ 0 25 34.87	+0.27	0.996485
56 03 23.71	5556.21862	4		0 11 12.721	+.062		+ 1 12 53.34	+0.49	0.997042
56 03 25.71	5558.21819	1		0 18 29.098	+.044		+ 2 00 03.30	+0.17	0.997607
56 03 27.71	5560.21777	4		0 25 45.425	+.075		+ 2 47 00.75	−2.20	0.998180
56 04 01.71	5565.21672	1		0 43 56.940	+.029		+ 4 43 29.87	+0.36	0.999639
56 07 26.71	5681.21851	8		8 23 52.794	+.066		+19 20 21.84	+0.19	1.015507
56 07 27.71	5682.21850	1		8 27 48.698	+.001		+19 06 49.59	+1.15	1.015404
56 08 09.71	5695.21780	1		9 18 02.816	+.096		+15 43 29.36	−1.80	1.013647
56 08 10.71	5696.21769	3		9 21 50.449	+.031		+15 25 57.12	−1.57	1.013475
56 08 11.71	5697.21759	1		9 25 37.647	+.123		+15 08 11.62	+0.13	1.013298
56 08 15.71	5701.21708	3		9 40 40.245	−.013		+13 54 40.86	−0.92	1.012551
56 08 17.71	5703.21679	3		9 48 08.362	+.031		+13 16 35.74	−0.91	1.012158
56 08 18.71	5704.21664	1		9 51 51.662	+.071		+12 57 14.97	−0.11	1.011957
56 08 22.71	5708.21597	3		10 06 39.769	+.067		+11 37 48.26	−0.81	1.011132
56 09 09.71	5726.21212	1		11 12 04.215	+.026		+ 5 08 40.35	+0.09	1.006891
56 09 10.71	5727.21188	5		11 15 39.889	+.005		+ 4 45 55.49	−0.49	1.006623
56 09 11.71	5728.21164	1		11 19 15.447	+.014		+ 4 23 06.95	+0.12	1.006353
56 09 13.71	5730.21115	1		11 26 26.243	+.050		+ 3 37 15.43	−0.09	1.005808
56 09 14.71	5731.21090	5		11 30 01.489	+.055		+ 3 14 13.08	−0.83	1.005534
56 09 16.71	5733.21041	1		11 37 11.746	−.004		+ 2 27 59.82	−0.70	1.004981
56 09 18.70	5735.20991	1		11 44 22.074	+.092		+ 1 41 35.13	−0.49	1.004426
56 09 20.70	5737.20942	5		11 51 32.377	+.052		+ 0 55 02.37	+0.60	1.003871
56 09 21.70	5738.20918	8		11 55 07.690	+.099		+ 0 31 43.14	+0.90	1.003593
56 09 23.70	5740.20869	1		12 02 18.450	.000		− 0 15 01.72	−1.31	1.003038
56 09 30.70	5747.20705	1		12 27 32.318	+.032		− 2 58 33.44	−0.64	1.001088
56 10 01.70	5748.20683	8		12 31 09.632	+.066		− 3 21 51.39	−1.13	1.000806
56 10 02.70	5749.20661	2		12 34			− 3 45 06.72	−1.17	1.000522
56 10 05.70	5752.20597	1		12 45 42.037	+.106		− 4 54 34.59	−0.18	0.999660
56 10 08.70	5755.20538	1		12 56 40.171	+.088		− 6 03 30.32	−0.19	0.998786
56 10 09.70	5756.20519	3		13 00 20.351	+.061		− 6 26 18.78	+0.72	0.998494
56 10 11.70	5758.20483	2		13 07			− 7 11 42.68	−0.30	0.997909
56 10 13.70	5760.20449	1		13 15 05.830	+.094		− 7 56 41.79	−0.30	0.997327
56 10 14.70	5761.20433	1		13 18 48.369	+.038		− 8 19 00.28	+0.95	0.997037
56 10 16.70	5763.20402	1		13 26 15.233	+.077		− 9 03 19.58	−0.54	0.996461
56 11 06.70	5784.20275	1		14 47 12.809	+.098		−16 07 19.85	−0.44	0.990927
56 11 11.70	5789.20305	1		15 07 20.900	+.130		−17 33 06.55	+0.94	0.989716
56 11 15.70	5793.20345	3		15 23 42.294	+.119		−18 36 19.63	+0.87	0.988804
56 11 18.70	5796.20386	1		15 36 07.113	+.114		−19 20 19.37	−0.09	0.988166
56 11 19.70	5797.20401	5		15 40 17.041	+.098		−19 34 16.31	+1.35	0.987964

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

SUN

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
56 11 23.70	5801.20472	1		15 57			−20 26 34.42	+1.32	0.987202
56 11 28.70	5806.20582	3		16 18 22.732	+.099		−21 23 24.17	+1.97	0.986345
56 11 30.70	5808.20632	8		16 26 58.930	+.069		−21 43 21.99	+0.38	0.986025
56 12 03.70	5811.20712	1		16 39			−22 10 07.70	+1.53	0.985567
56 12 04.70	5812.20740	2		16 44 19.310	+.212		−22 18		0.985421
56 12 10.70	5818.20922	8		17 10 35.638	+.068		−22 57 26.88	−0.04	0.984620
57 01 14.72	5853.22046	8		19 44 49.442	+.070		−21 15 35.06	−1.28	0.983614
57 01 18.72	5857.22140	2		20 01			−20 29 22.69	+2.42	0.983899
57 01 19.72	5858.22161	1		20 06 11.833	+.105		−20 16 53.48	+0.45	0.983987
57 01 24.72	5863.22255	1		20 27 16.053	+.150		−19 08 39.52	+1.25	0.984505
57 02 02.72	5872.22367	1		21 04			−16 44 15.51	+0.09	0.985691
57 02 10.72	5880.22402	1		21 36 24.839	+.135		−14 15 55.09	+1.01	0.986982
57 02 12.72	5882.22402	1		21 44 17.430	+.084		−13 36 22.34	−0.60	0.987348
57 02 17.72	5887.22385	1		22 03 45.794	+.059		−11 53		0.988353
57 02 18.72	5888.22379	1		22 07 37.404	+.112		−11 32 29.57	+1.44	0.988569
57 02 20.72	5890.22365	8		22 15 18.436	+.020		−10 49 41.04	+1.04	0.989012
57 02 21.72	5891.22357	2		22 19 08.099	+.074		−10 28		0.989240
57 02 24.72	5894.22329	1		22 30 33.342	+.184		− 9 22 04.52	+0.82	0.989939
57 03 03.72	5901.22240	1		22 56 52.296	+.096		− 6 43 35.21	+0.23	0.991642
57 03 04.72	5902.22225	8		23 00 35.933	+.181		− 6 20 30.26	+0.96	0.991891
57 03 05.72	5903.22210	5		23 04 18.972	+.117		− 5 57 20.01	+1.83	0.992141
57 03 10.72	5908.22125	1		23 22 48.113	+.012		− 4 00 29.43	+1.32	0.993416
57 03 13.72	5911.22069	2		23 33 49.476	+.167		− 2 49 45.42	+1.38	0.994207
57 03 14.72	5912.22050	2		23 37 29.032	−.078		− 2 26 07.61	+0.51	0.994476
57 03 16.72	5914.22010	1		23 44 47.968	+.019		− 1 38 46.25	+0.67	0.995025
57 03 21.71	5919.21908	2		0 03 01.875	−.021		+ 0 19 41.89	−1.54	0.996441
57 03 23.71	5921.21866	1		0 10 18.717	+.015		+ 1 07 04.12	+1.02	0.997019
57 03 24.71	5922.21845	1		0 13			+ 1 30 40.11	−0.38	0.997310
57 03 31.71	5929.21698	1		0 39 25.387	−.009		+ 4 14 43.12	+0.53	0.999339
57 04 03.71	5932.21636	5		0 50 21.497	+.022		+ 5 23 58.01	+0.04	1.000195
57 04 10.71	5939.21498	8		1 15 58.047	+.057		+ 8 01 55.64	−0.83	1.002158
57 04 11.71	5940.21479	8		1 19 38.437	+.062		+ 8 24 00.73	+0.16	1.002438
57 04 12.71	5941.21461	2		1 23 18.961	−.085		+ 8 45		1.002718
57 04 14.71	5943.21425	1		1 30 41.318	+.020		+ 9 29		1.003280
57 04 15.71	5944.21408	1		1 34 22.958	+.031		+ 9 50		1.003561
57 04 30.71	5959.21210	2		2 30 39.420	+.053		+14 50 24.28	−0.93	1.007652
57 05 01.71	5960.21201	3		2 34 28.454	+.017		+15 08 37.24	−1.27	1.007903
57 05 02.71	5961.21193	1		2 38 18.066	+.025		+15 26 36.60	−0.15	1.008150
57 05 03.71	5962.21186	2		2 42 08.157	−.027		+15 44 19.24	−0.35	1.008394
57 05 04.71	5963.21179	1		2 45 58.841	−.020		+16 01 46.69	−0.12	1.008635
57 05 06.71	5965.21167	2		2 53 41.819	−.019		+16 35 53.31	+0.32	1.009107
57 05 07.71	5966.21162	1		2 57 34.143	+.007		+16 52 31.68	+0.37	1.009338
57 05 08.71	5967.21158	3		3 01 27.008	+.025		+17 08 52.22	−0.48	1.009566
57 05 09.71	5968.21154	8		3 05 20.422	+.043		+17 24 56.74	−0.13	1.009793
57 05 10.71	5969.21151	2		3 09			+17 40 43.24	−0.35	1.010018
57 05 13.71	5972.21146	2		3 20 59.638	+.057		+18 26 15.42	−0.45	1.010680
57 05 15.71	5974.21146	2		3 28 52.597	−.014		+18 55 04.16	−0.70	1.011112
57 05 18.71	5977.21151	1		3 40 46.493	+.034		+19 35 53.64	−0.69	1.011746
57 05 23.71	5982.21172	2		4 00 47.405	−.102		+20 37 12.72	−1.66	1.012744
57 05 24.71	5983.21178	2		4 04 49.333	−.013		+20 48 26.50	−1.24	1.012933
57 05 25.71	5984.21185	1		4 08 51.758	+.041		+20 59 19.53	−0.15	1.013116
57 05 26.71	5985.21192	1		4 12 54.665	+.073		+21 09 48.74	−1.16	1.013295
57 05 28.71	5987.21209	1		4 21 01.776	−.051		+21 29 43.62	−0.86	1.013638
57 05 30.71	5989.21227	1		4 29 10.897	−.026		+21 48 09.45	−0.33	1.013959
57 06 01.71	5991.21247	1		4 37 21.669	−.027		+22 05 03.70	−0.44	1.014259

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

SUN

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
57 06 10.71	6000.21358	8		5 14 26.813	+.053		+23 01 47.82	-0.20	1.015379
57 06 13.71	6003.21400	2		5 26 53.100	+.121		+23 13 28.05	-1.26	1.015690
57 06 14.71	6004.21415	5		5 31 02.110	+.037		+23 16 34.43	+0.36	1.015787
57 06 15.71	6005.21430	1		5 35 11.317	+.010		+23 19 14.62	+0.35	1.015880
57 06 16.71	6006.21444	1		5 39 20.607	-.046		+23 21 28.51	-1.19	1.015970
57 06 20.71	6010.21504	2		5 55 58.939	+.097		+23 26 23.44	-0.24	1.016290
57 06 21.71	6011.21519	3		6 00 08.544	+.063		+23 26 34.61	-0.52	1.016358
57 06 26.71	6016.21594	2		6 20 56.073	+.057		+23 21 19.98	-0.38	1.016622
57 06 27.71	6017.21609	8		6 25 05.226	+.020		+23 19 03.17	-0.07	1.016657
57 06 28.71	6018.21623	2		6 29 14.301	+.071		+23 16 20.55	-1.02	1.016686
57 07 01.71	6021.21665	8		6 41 39.949	-.025		+23 05 49.84	-0.42	1.016734
57 07 02.71	6022.21678	5		6 45 48.008	-.020		+23 01 29.36	-1.85	1.016739
57 07 03.71	6023.21691	8		6 49			+22 56 47.01	-1.12	1.016738
57 07 10.71	6030.21770	8		7 18 40.021	+.056		+22 12 41.80	-1.39	1.016606
57 07 11.71	6031.21779	2		7 22 44.667	+.019		+22 04 50.93	-1.48	1.016572
57 07 16.71	6036.21818	1		7 43 01.086	+.027		+21 20 00.53	-0.19	1.016349
57 07 19.71	6039.21834	5		7 55 04.957	+.018		+20 48 41.66	-1.06	1.016169
57 07 25.71	6045.21850	8		8 18 58.152	-.006		+19 36 42.41	-0.99	1.015680
57 07 28.71	6048.21849	1		8 30 47.063	+.082		+18 56 15.72	-0.65	1.015358
57 07 30.71	6050.21845	8		8 38 36.561	+.091		+18 27 43.46	-1.05	1.015114
57 08 01.71	6052.21838	2		8 46			+17 58 00.11	-0.16	1.014849
57 08 02.71	6053.21834	3		8 50 16.111	+.083		+17 42 39.31	-2.45	1.014709
57 08 03.71	6054.21828	1		8 54			+17 27 04.28	-1.80	1.014565
57 08 06.71	6057.21808	8		9 05 40.060	+.011		+16 38 37.53	-0.88	1.014110
57 08 07.71	6058.21800	3		9 09 29.572	+.050		+16 21 56.04	-0.72	1.013952
57 08 08.71	6059.21791	2		9 13 18.476	+.082		+16 05 00.38	+1.02	1.013791
57 08 11.71	6062.21760	1		9 24 41.583	+.097		+15 12 34.60	-0.77	1.013291
57 08 12.71	6063.21749	2		9 28 28.009	-.033		+14 54 37.00	-0.80	1.013119
57 08 13.71	6064.21737	8		9 32 14.119	+.067		+14 36 26.07	+0.21	1.012945
57 08 16.71	6067.21696	1		9 43 28.892	+.004		+13 40 26.90	-0.22	1.012404
57 08 18.71	6069.21667	1		9 50 56.342	+.105		+13 02 01.02	-0.93	1.012028
57 08 23.71	6074.21583	1		10 09 26.491	+.009		+11 22 26.56	+0.23	1.011023
57 08 27.71	6078.21507	1		10 24 06.982	+.056		+ 9 59 28.44	-0.73	1.010139
57 08 30.71	6081.21445	1		10 35 03.271	+.099		+ 8 55 35.19	-0.60	1.009429
57 09 01.71	6083.21402	1		10 42 19.002	+.076		+ 8 12 16.25	-1.05	1.008939
57 09 05.71	6087.21312	8		10 56 46.910	+.068		+ 6 44 08.03	-1.05	1.007932
57 09 15.71	6097.21070	1		11 32 43.222	+.029		+ 2 56 51.05	-0.71	1.005331
57 09 19.70	6101.20972	2		11 47 04.096	+.023		+ 1 24 02.35	-0.30	1.004259
57 09 22.70	6104.20899	1		11 57 50.345	+.023		+ 0 14 02.33	-0.57	1.003434
57 09 25.70	6107.20827	1		12 08 37.701	+.109		- 0 56 06.68	-0.93	1.002586
57 09 26.70	6108.20803	2		12 12 13.766	+.106		- 1 19 30.56	-1.54	1.002298
57 09 28.70	6110.20756	3		12 19 26.446	+.096		- 2 06 14.86	-1.12	1.001718
57 10 02.70	6114.20666	1		12 33 54.590	+.121		- 3 39 27.77	-1.34	1.000547
57 10 03.70	6115.20645	3		12 37 32.265	+.077		- 4 02 40.15	-1.13	1.000254
57 10 11.70	6123.20486	3		13 06 47.402	+.109		- 7 06 05.14	+1.29	0.997946
57 10 12.70	6124.20469	1		13 10 28.742	+.037		- 7 28 40.91	-0.54	0.997665
57 10 13.70	6125.20452	1		13 14 10.660	+.024		- 7 51 08.35	-0.05	0.997385
57 10 14.70	6126.20435	8		13 17 53.083	-.019		- 8 13 30.63	-0.83	0.997106
57 10 15.70	6127.20420	1		13 21 36.195	+.057		- 8 35 44.47	-0.05	0.996829
57 10 16.70	6128.20405	3		13 25 19.814	+.051		- 8 57 53.76	-1.83	0.996553
57 10 20.70	6132.20352	1		13 40 20.452	+.054		-10 25 03.12	-1.05	0.995455
57 10 21.70	6133.20341	8		13 44 07.246	+.076		-10 46 27.55	+0.06	0.995181
57 10 22.70	6134.20331	1		13 47 54.683	+.064		-11 07 43.56	+0.07	0.994907
57 10 23.70	6135.20321	2		13 51 42.821	+.059		-11 28 49.32	+0.36	0.994633
57 10 25.70	6137.20304	3		13 59 21.177	+.055		-12 10 30.75	-0.74	0.994085

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

SUN

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
57 11 03.70	6146.20269	1		14 34			-15 07 57.18	+1.16	0.991682
57 11 04.70	6147.20270	2		14 38 17.390	+.079		-15 26 31.89	+0.52	0.991428
57 11 05.70	6148.20272	8		14 42 15.330	+.083		-15 44 51.23	+0.07	0.991177
57 11 06.70	6149.20274	5		14 46 14.089	+.083		-16 02 54.87	-0.40	0.990930
57 11 07.70	6150.20278	3		14 50 13.696	+.093		-16 20 40.43	+1.18	0.990687
57 11 09.70	6152.20288	3		14 58 15.280	-.059		-16 55 27.55	-1.31	0.990213
57 11 11.70	6154.20301	3		15 06 20.691	+.178		-17 29 04.32	-2.37	0.989756
57 11 12.70	6155.20310	1		15 10 24.487	+.096		-17 45 22.42	+0.57	0.989533
57 11 13.70	6156.20319	3		15 14 29.189	+.050		-18 01 25.09	+0.56	0.989314
57 11 21.70	6164.20431	2		15 47 38.289	+.171		-19 57 55.56	+0.81	0.987672
57 11 27.70	6170.20554	2		16 13 03.930	+.086		-21 10 09.53	+1.92	0.986544
57 12 01.70	6174.20652	1		16 30 15.372	+.151		-21 50 26.07	+0.91	0.985863
57 12 02.70	6175.20678	2		16 34 34.848	+.170		-21 59 27.57	+1.15	0.985705
57 12 17.71	6190.21144	8		17 40 26.451	+.088		-23 21		0.983981
57 12 23.71	6196.21351	8		18 07 05.431	+.044		-23 25 56.29	+0.61	0.983585
57 12 30.71	6203.21591	2		18 38 09.079	+.156		-23 09 09.26	+1.27	0.983305
58 01 02.71	6206.21690	2		18 51 24.234	+.114		-22 54 59.03	+1.58	0.983263
58 01 06.71	6210.21815	2		19 08 59.280	+.115		-22 29 43.66	+1.38	0.983293
58 01 09.71	6213.21904	2		19 22 05.781	+.124		-22 06 08.65	-0.74	0.983384
58 01 11.71	6215.21960	1		19 30 47.450	+.087		-21 48 11.23	+1.54	0.983474
58 01 23.72	6227.22234	2		20 22 03.734	+.061		-19 26 25.22	+0.52	0.984393
58 01 27.72	6231.22298	8		20 38 45.071	+.074		-18 27 11.37	+0.77	0.984822
58 01 28.72	6232.22311	2		20 42 53.403	+.135		-18 11 31.32	+1.47	0.984940
58 01 29.72	6233.22324	2		20 47 00.747	+.037		-17 55 33.02	+0.92	0.985063
58 02 08.72	6243.22397	1		21 27 29.629	+.045		-14 59 16.18	+0.19	0.986587
58 02 12.72	6247.22401	3		21 43 18.958	+.029		-13 41 15.57	+0.99	0.987341
58 02 13.72	6248.22399	2		21 47 14.449	+.055		-13 21		0.987538
58 02 25.72	6260.22321	1		22 33 25.521	+.112		- 9 05 12.64	+0.36	0.990098
58 03 03.72	6266.22244	2		22 55 57.471	+.059		- 6 49 13.32	+0.51	0.991515
58 03 07.72	6270.22180	1		23 10 48.944	+.126		- 5 16 34.24	+0.97	0.992533
58 03 08.72	6271.22163	1		23 14 30.654	+.016		- 4 53 14.42	-0.51	0.992797
58 03 10.72	6273.22128	2		23 21 53.313	+.072		- 4 06 19.46	+0.73	0.993334
58 03 12.72	6275.22092	3		23 29 14.503	-.077		- 3 19 12.16	+1.52	0.993881
58 03 28.71	6291.21766	2		0 27 37.588	+.059		+ 2 59 05.12	+0.66	0.998346
58 03 29.71	6292.21745	1		0 31 15.827	+.030		+ 3 22 29.22	+1.15	0.998627
58 04 01.71	6295.21682	8		0 42 10.883	+.028		+ 4 32 13.58	-0.16	0.999472
58 04 02.71	6296.21661	8		0 45 49.389	+.033		+ 4 55 19.40	-0.08	0.999755
58 04 03.71	6297.21640	1		0 49 28.006	+.022		+ 5 18 19.55	-0.37	1.000041
58 04 04.71	6298.21620	3		0 53 06.671	-.083		+ 5 41 15.70	+0.86	1.000328
58 04 09.71	6303.21521	1		1 11 23.662	+.043		+ 7 34 15.87	+1.65	1.001780
58 04 13.71	6307.21447	1		1 26 05.900	+.022		+ 9 02 22.86	-0.54	1.002940
58 04 14.71	6308.21429	5		1 29 47.283	+.034		+ 9 24 03.67	-0.49	1.003226
58 04 15.71	6309.21412	5		1 33 29.019	+.063		+ 9 45 35.63	-0.01	1.003511
58 04 17.71	6311.21379	2		1 40 53.505	+.019		+10 28 09.45	+0.22	1.004074
58 04 18.71	6312.21364	8		1 44 36.355	+.023		+10 49 10.74	+0.01	1.004353
58 04 20.71	6314.21333	1		1 52 03.228	-.001		+11 30 41.76	+0.51	1.004901
58 04 21.71	6315.21319	2		1 55 47.371	+.059		+11 51 09.58	-0.04	1.005171
58 04 26.71	6320.21255	1		2 14 34.352	+.022		+13 30 29.16	-0.08	1.006482
58 04 30.71	6324.21213	3		2 29 44.431	+.019		+14 45 58.01	+0.02	1.007495
58 05 11.71	6335.21150	1		3 12			+17 52 27.17	+0.30	1.010176
58 05 12.71	6336.21148	8		3 16 06.929	+.038		+18 07 41.63	-0.85	1.010407
58 05 13.71	6337.21147	8		3 20 02.622	+.059		+18 22 39.14	-0.64	1.010633
58 05 14.71	6338.21147	1		3 23 58.808	-.003		+18 37 18.50	-0.13	1.010856
58 05 16.71	6340.21148	5		3 31 53.072	+.001		+19 05 38.84	-0.71	1.011290
58 05 17.71	6341.21150	1		3 35 51.078	+.007		+19 19 20.95	-0.12	1.011500

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

SUN

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
58 05 18.71	6342.21152	1		3 39 49.664	+.036		+19 32 42.59	-0.48	1.011706
58 05 20.71	6344.21159	2		3 47 48.437	+.010		+19 58 26.55	-0.36	1.012103
58 05 21.71	6345.21163	1		3 51 48.635	+.006		+20 10 47.65	-0.64	1.012295
58 05 22.71	6346.21168	2		3 55 49.352	-.013		+20 22 48.84	-0.22	1.012482
58 05 26.71	6350.21193	8		4 11 57.272	-.003		+21 07 19.71	-0.28	1.013185
58 05 28.71	6352.21208	3		4 20 04.065	+.011		+21 27 24.03	-0.94	1.013513
58 05 29.71	6353.21217	8		4 24 08.062	-.054		+21 36 53.96	-0.12	1.013672
58 05 31.71	6355.21236	5		4 32 17.549	+.025		+21 54 44.02	-0.56	1.013983
58 06 04.71	6359.21279	2		4 48 41.238	+.044		+22 25 50.10	-0.01	1.014573
58 06 05.71	6360.21291	8		4 52 48.106	+.063		+22 32 37.81	-0.26	1.014713
58 06 06.71	6361.21303	5		4 56 55.217	-.021		+22 39 01.25	-1.12	1.014850
58 06 11.71	6366.21370	8		5 17 35.791	+.086		+23 05 02.66	-1.22	1.015475
58 06 16.71	6371.21443	3		5 38 21.834	+.090		+23 20 54.66	-1.48	1.015975
58 06 17.71	6372.21458	1		5 42 31.373	+.026		+23 22 51.74	-0.90	1.016057
58 06 19.71	6374.21488	1		5 50 50.755	+.023		+23 25 30.46	-0.95	1.016205
58 06 25.71	6380.21578	1		6 15 48.320	+.059		+23 23 32.98	-0.09	1.016514
58 06 26.71	6381.21593	8		6 19 57.569	+.080		+23 21 45.91	-0.79	1.016549
58 06 27.71	6382.21607	2		6 24 06.625	+.062		+23 19 34.47	-1.27	1.016579
58 06 29.71	6384.21636	1		6 32 24.154	+.014		+23 13 59.06	-1.07	1.016630
58 06 30.71	6385.21649	8		6 36 32.664	+.049		+23 10 35.22	-0.41	1.016650
58 07 01.71	6386.21663	1		6 40 40.892	+.038		+23 06 44.70	-2.08	1.016666
58 07 02.71	6387.21676	2		6 44 48.940	+.104		+23 02 32.16	-1.49	1.016680
58 07 05.71	6390.21714	1		6 57			+22 47 28.88	-0.98	1.016698
58 07 07.71	6392.21737	8		7 05 24.344	+.027		+22 35 27.54	-0.54	1.016691
58 09 13.71	6460.21127	1		11 24 41.637	+.002		+ 3 48 23.76	+0.12	1.006006
58 09 14.71	6461.21103	1		11 28 17.051	+.045		+ 3 25 22.45	-0.93	1.005737
58 09 18.71	6465.21004	8		11 42 38.136	+.099		+ 1 52 48.70	-0.16	1.004630
58 09 22.70	6469.20906	2		11 56 59.224	+.055		+ 0 19 35.86	-1.05	1.003492
58 09 23.70	6470.20882	5		12 00			- 0 03 45.49	-1.16	1.003206
58 09 25.70	6472.20833	8		12 07 45.904	+.056		- 0 50 28.59	+0.06	1.002634
58 09 29.70	6476.20739	8		12 22			- 2 23 55.73	-1.01	1.001494
58 10 02.70	6479.20672	2		12 33 01.544	+.136		- 3 33 47.65	-0.87	1.000645
58 10 05.70	6482.20607	1		12 43 55.455	+.134		- 4 43 17.83	+0.19	0.999800
58 10 06.70	6483.20587	8		12 47 34.123	+.087		- 5 06 23.37	-1.24	0.999518
58 10 07.70	6484.20566	2		12 51 13.236	+.078		- 5 29 23.18	-0.72	0.999237
58 10 08.70	6485.20547	5		12 54 52.776	+.068		- 5 52 19.03	-0.36	0.998955
58 10 09.70	6486.20528	8		12 58 32.699	.000		- 6 15 11.33	-0.92	0.998673
58 10 10.70	6487.20509	2		13 02 13.186	+.032		- 6 37 58.09	-0.84	0.998390
58 10 12.70	6489.20474	1		13 09 35.549	+.041		- 7 23 15.35	-0.66	0.997821
58 10 15.70	6492.20425	2		13 20 42.931	+.049		- 8 30 25.13	-0.46	0.996960
58 10 16.70	6493.20410	2		13 24 26.561	+.142		- 8 52 35.19	-1.18	0.996672
58 10 17.70	6494.20395	3		13 28 10.622	+.098		- 9 14 35.22	+0.55	0.996384
58 10 18.70	6495.20382	1		13 31 55.296	+.097		- 9 36 30.01	-0.50	0.996096
58 10 20.70	6497.20356	8		13 39 26.392	+.051		-10 19 51.22	+0.04	0.995524
58 10 24.70	6501.20314	2		13 54 36.288	+.032		-11 44 41.28	+0.03	0.994401
58 10 25.70	6502.20306	1		13 58 25.518	+.085		-12 05 27.46	+0.54	0.994126
58 10 27.70	6504.20291	2		14 06 05.985	+.046		-12 46 27.56	+0.01	0.993585
58 10 29.70	6506.20280	5		14 13 49.484	+.054		-13 26 39.22	+0.42	0.993057
58 10 30.70	6507.20276	8		14 17 42.463	+.122		-13 46 28.19	-1.27	0.992797
58 11 03.70	6511.20269	2		14 33 22.012	+.021		-15 03 22.45	-1.24	0.991788
58 11 05.70	6513.20270	3		14 41 16.926	+.137		-15 40 21.18	+0.80	0.991301
58 11 06.70	6514.20273	8		14 45 15.507	+.055		-15 58 32.45	-3.17	0.991061
58 11 07.70	6515.20276	2		14 49 15.053	+.077		-16 16 20.90	-0.12	0.990823
58 11 08.70	6516.20281	1		14 53 15.489	+.129		-16 33 56.09	-0.21	0.990586
58 11 13.70	6521.20318	2		15 13 30.263	+.123		-17 57 32.24	+0.21	0.989425

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

SUN

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
58 11 14.70	6522.20328	3		15 17 35.725	+.089		−18 13 19.86	+1.24	0.989197
58 11 19.70	6527.20394	2		15 38 15.589	+.092		−19 27 28.08	+0.40	0.988101
58 11 20.70	6528.20410	8		15 42 25.966	+.060		−19 41 15.39	+0.72	0.987892
58 11 21.70	6529.20427	2		15 46 37.285	+.175		−19 54 43.45	−1.20	0.987688
58 11 25.70	6533.20504	1		16 03 29.890	+.123		−20 44 43.30	+1.78	0.986916
58 11 29.70	6537.20594	1		16 20 34.627	+.139		−21 28 37.20	−0.10	0.986226
58 11 30.70	6538.20619	1		16 24 52.535	+.081		−21 38 35.42	−0.60	0.986067
58 12 02.70	6540.20671	5		16 33 30.519	+.099		−21 57 14.78	+0.81	0.985764
58 12 09.70	6547.20874	1		17 04			−22 49 07.91	−0.50	0.984837
58 12 10.70	6548.20905	2		17 08 26.063	−.051		−22 54 43.83	+1.97	0.984718
58 12 12.70	6550.20969	3		17 17 14.925	+.064		−23 04 41.02	+0.07	0.984490
58 12 13.71	6551.21002	1		17 21 39.874	+.108		−23 08 56.31	+1.28	0.984381
58 12 18.71	6556.21170	3		17 43 48.292	+.088		−23 23 22.71	+0.51	0.983897
58 12 19.71	6557.21205	2		17 48 14.467	+.023		−23 24 50.41	+1.84	0.983815
58 12 22.71	6560.21308	8		18 01 33.716	+.056		−23 26 28.76	+1.12	0.983601
59 01 14.72	6583.22034	2		19 42 43.269	+.066		−21 20 38.16	+2.54	0.983624
59 01 17.72	6586.22107	1		19 55 36.189	+.146		−20 47 12.65	+1.73	0.983802
59 01 18.72	6587.22129	1		19 59 52.429	+.188		−20 35 16.43	+1.43	0.983871
59 01 22.72	6591.22211	1		20 16 49.551	+.039		−19 43 41.51	+0.10	0.984203
59 01 23.72	6592.22229	2		20 21 01.993	+.093		−19 29 51.12	+0.59	0.984301
59 01 24.72	6593.22247	1		20 25 13.579	+.083		−19 15 38.44	+1.85	0.984405
59 01 25.72	6594.22263	1		20 29 24.393	+.088		−19 01 07.19	+0.35	0.984515
59 01 28.72	6597.22307	5		20 41 52.003	+.064		−18 15 25.20	+0.27	0.984880
59 02 02.72	6602.22362	5		21 02 22.144	+.117		−16 52 42.99	+1.71	0.985595
59 02 03.72	6603.22370	2		21 06 25.734	+.088		−16 35 16.05	+1.56	0.985751
59 02 05.72	6605.22383	2		21 14 30.535	+.044		−15 59 29.45	+2.21	0.986073
59 02 06.72	6606.22389	1		21 18 31.768	+.069		−15 41 12.49	+1.23	0.986238
59 02 07.72	6607.22393	1		21 22 32.227	+.118		−15 22 37.93	+1.80	0.986406
59 02 11.72	6611.22402	5		21 38 25.840	+.099		−14 05 51.80	−0.18	0.987105
59 02 12.72	6612.22402	2		21 42 22.213	+.043		−13 46 02.21	+1.41	0.987287
59 02 16.72	6616.22392	2		21 58 00.305	+.079		−12 24 39.74	+1.09	0.988048
59 02 19.72	6619.22376	2		22 09 36.041	+.001		−11 21 31.19	+1.72	0.988658
59 02 21.72	6621.22362	1		22 17 16.575	+.144		−10 38 32.81	+1.14	0.989086
59 02 22.72	6622.22353	1		22 21 05.665	+.027		−10 16 48.35	+1.17	0.989307
59 02 25.72	6625.22323	3		22 32 29.524	+.025		− 9 10 40.40	+0.81	0.989997
59 02 28.72	6628.22288	1		22 43			− 8 03 17.17	+1.09	0.990724
59 03 03.72	6631.22247	5		22 55 02.337	+.027		− 6 54 50.41	+0.80	0.991481
59 03 04.72	6632.22232	2		22 58 46.083	+.008		− 6 31		0.991737
59 03 05.72	6633.22216	2		23 02 29.420	+.017		− 6 08 42.31	+0.51	0.991996
59 03 17.72	6645.22000	1		23 46 40.737	+.048		− 1 26 34.62	+0.93	0.995168
59 03 18.71	6646.21980	6		23 50 19.952	+.158		− 1 02 51.99	+1.01	0.995439
59 03 19.71	6647.21960	2		23 53 58.780	+.083		− 0 39 07.01	+3.32	0.995711
59 03 20.71	6648.21939	3		23 57 37.473	+.054		− 0 15 26.92	+1.03	0.995985
59 03 21.71	6649.21918	1		0 01 16.052	+.062		+ 0 08 14.85	+1.13	0.996261
59 03 22.71	6650.21898	1		0 04 54.475	+.040		+ 0 31 54.59	+0.26	0.996539
59 03 23.71	6651.21876	8		0 08 32.803	+.040		+ 0 55 35.71	+1.99	0.996820
59 03 24.71	6652.21855	6		0 12 10.992	−.017		+ 1 19 10.25	−1.20	0.997103
59 03 25.71	6653.21834	3		0 15 49.250	+.041		+ 1 42 47.76	+0.71	0.997387
59 03 26.71	6654.21813	1		0 19 27.411	+.035		+ 2 06 20.65	+0.23	0.997675
59 03 28.71	6656.21771	1		0 26 43.780	+.057		+ 2 53 19.06	+0.19	0.998256
59 03 29.71	6657.21749	1		0 30 21.988	+.041		+ 3 16 44.36	+1.05	0.998547
59 04 01.71	6660.21686	1		0 41 17.211	+.111		+ 4 26 32.86	−0.18	0.999429
59 04 05.71	6664.21605	1		0 55 52.442	+.066		+ 5 58 30.95	−0.19	1.000598
59 04 06.71	6665.21585	1		0 59 31.661	+.030		+ 6 21 16.78	+0.63	1.000888
59 04 07.71	6666.21565	6		1 03 11.238	+.162		+ 6 43 54.91	+0.31	1.001176

SUN

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
59 04 08.71	6667.21545	2		1 06 50.761	+.018		+ 7 06 26.11	-0.01	1.001462
59 04 14.71	6673.21435	3		1 28 54.138	+.004		+ 9 18 51.40	+0.04	1.003143
59 04 15.71	6674.21417	1		1 32 35.785	+.049		+ 9 40 25.88	+0.93	1.003418
59 04 16.71	6675.21401	8		1 36 17.673	+.016		+10 01 48.98	+0.07	1.003691
59 04 17.71	6676.21384	1		1 39 59.997	+.070		+10 23 03.16	+0.40	1.003963
59 04 18.71	6677.21368	1		1 43			+10 44 07.10	+0.82	1.004234
59 04 21.71	6680.21322	1		1 54 52.659	-.087		+11 46 10.17	-1.33	1.005046
59 04 22.71	6681.21308	1		1 58 36.980	+.007		+12 06 31.89	+1.51	1.005317
59 04 24.71	6683.21281	2		2 06 06.770	-.027		+12 46 32.51	+0.40	1.005856
59 04 25.71	6684.21269	1		2 09 52.439	+.023		+13 06 14.14	-0.09	1.006126
59 04 29.71	6688.21224	8		2 24			+14 22 51.56	+0.35	1.007196
59 05 01.71	6690.21205	2		2 32 36.958	-.005		+14 59		1.007719
59 05 02.71	6691.21197	1		2 36 26.346	+.074		+15 17 51.40	-0.21	1.007977
59 05 03.71	6692.21189	1		2 40 16.156	+.011		+15 35 40.77	-1.15	1.008232
59 05 04.71	6693.21182	2		2 44 06.481	-.094		+15 53 17.26	+0.44	1.008483
59 05 05.71	6694.21176	5		2 47 57.588	+.017		+16 10 35.64	-0.30	1.008731
59 05 06.71	6695.21170	3		2 51 49.153	+.013		+16 27 38.25	-0.78	1.008975
59 05 07.71	6696.21165	8		2 55 41.283	-.001		+16 44 24.98	-0.69	1.009215
59 05 08.71	6697.21161	6		2 59 33.849	-.143		+17 00 55.52	-0.14	1.009452
59 05 09.71	6698.21157	1		3 03 27.304	+.033		+17 17 08.36	-0.25	1.009685
59 05 11.71	6700.21151	6		3 11 15.620	+.091		+17 48 42.26	-0.10	1.010137
59 05 12.71	6701.21149	1		3 15 10.405	-.103		+18 04 01.81	-0.68	1.010357
59 05 17.71	6706.21150	6		3 34 53.617	-.082		+19 16 03.49	-0.47	1.011406
59 05 19.71	6708.21155	8		3 42 50.823	+.031		+19 42 37.05	+0.10	1.011804
59 05 22.71	6711.21166	2		3 54 50.446	-.027		+20 19 55.32	+0.64	1.012385
59 05 25.71	6714.21183	8		4 06 55.098	+.166		+20 54 04.60	-0.11	1.012947
59 05 28.71	6717.21206	8		4 19 04.127	+.108		+21 25 01.08	+0.31	1.013485
59 05 30.71	6719.21223	6		4 27 12.544	+.038		+21 43 48.04	+0.55	1.013826
59 06 05.71	6725.21288	2		4 51 48.452	+.178		+22 30 58.99	-0.22	1.014736
59 06 06.71	6726.21301	6		4 55 55.517	-.024		+22 37 28.85	-0.51	1.014870
59 06 07.71	6727.21314	6		5 00 03.060	-.071		+22 43 34.89	-0.86	1.014997
59 06 15.71	6735.21425	2		5 33 12.320	+.098		+23 17 55.55	-0.79	1.015829
59 06 19.71	6739.21485	6		5 49 49.923	-.028		+23 25 16.36	-0.78	1.016140
59 06 20.71	6740.21500	1		5 53 59.497	+.005		+23 26 04.29	-1.12	1.016209
59 06 21.71	6741.21515	1		5 58 09.020	-.012		+23 26 27.63	-1.26	1.016276
59 06 26.71	6746.21589	1		6 18 56.172	+.071		+23 22 12.47	-1.63	1.016556
59 06 28.71	6748.21618	1		6 27 14.256	+.013		+23 17 38.22	-0.93	1.016639
59 07 03.71	6753.21686	6		6 47 56.231	-.082		+22 59		1.016756
59 07 04.71	6754.21699	1		6 52 04.039	+.067		+22 54 08.34	+0.36	1.016762
59 07 07.71	6757.21735	1		7 04 25.045	+.037		+22 36 58.01	+0.13	1.016745
59 07 08.71	6758.21746	6		7 08 31.280	-.013		+22 30 26.04	-1.23	1.016727
59 07 19.71	6769.21835	1		7 53 10.018	+.049		+20 53		1.016193
59 07 21.71	6771.21843	2		8 01 10.234	+.007		+20 31 34.00	-0.31	1.016046
59 07 23.71	6773.21849	8		8 09 08.245	+.007		+20 07 53.86	-0.58	1.015887
59 07 27.71	6777.21852	8		8 24 57.497	+.065		+19 16 33.82	-0.25	1.015521
59 08 01.71	6782.21841	1		8 44 30.901	+.055		+18 05 13.71	-0.77	1.014962
59 08 02.71	6783.21837	1		8 48 23.761	+.012		+17 50 03.38	-0.89	1.014836
59 08 03.71	6784.21832	8		8 52 16.114	+.064		+17 34 36.21	-0.30	1.014703
59 08 05.71	6786.21820	8		8 59 58.848	+.013		+17 02 48.90	-1.09	1.014421
59 08 10.71	6791.21778	1		9 19 05.224	+.027		+15 38 39.89	-0.33	1.013622
59 08 11.71	6792.21768	2		9 22 52.729	+.062		+15 21 02.92	-1.19	1.013448
59 08 13.71	6794.21745	5		9 30 25.916	+.056		+14 45 06.50	-1.77	1.013089
59 08 14.71	6795.21732	1		9 34 11.630	+.041		+14 26 48.29	-0.81	1.012904
59 08 17.71	6798.21691	1		9 45 25.444	-.040		+13 30 29.31	-1.18	1.012335
59 08 19.71	6800.21660	6		9 52 52.159	+.044		+12 51 52.11	-1.36	1.011944

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

SUN

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
59 08 20.71	6801.21644	5		9 56 34.730	+.042		+12 32 15.55	−0.86	1.011746
59 08 21.71	6802.21627	1		10 00 16.847	+.051		+12 12 26.67	−0.79	1.011545
59 08 25.71	6806.21556	6		10 15 00.784	−.025		+10 51 16.21	−1.91	1.010717
59 08 26.71	6807.21537	1		10 18 40.827	+.040		+10 30 32.57	−1.48	1.010503
59 09 03.71	6815.21369	8		10 47 48.102	−.004		+ 7 39 04.46	−2.20	1.008660
59 09 04.71	6816.21347	1		10 51 25.177	+.017		+ 7 17 02.51	−1.36	1.008412
59 09 05.71	6817.21324	1		10 55 02.015	+.068		+ 6 54 53.21	−0.83	1.008160
59 09 09.71	6821.21230	3		11 09 26.956	+.098		+ 5 25 09.97	−0.78	1.007119
59 09 10.71	6822.21206	6		11 13 02.599	+.010		+ 5 02 29.63	−1.09	1.006851
59 09 11.71	6823.21182	1		11 16 38.271	+.099		+ 4 39 44.99	−0.57	1.006583
59 09 12.71	6824.21157	1		11 20 13.678	+.066		+ 4 16 54.27	−1.39	1.006313
59 09 13.71	6825.21133	1		11 23 49.009	+.077		+ 3 54 00.01	−1.30	1.006042
59 09 14.71	6826.21108	1		11 27 24.192	+.040		+ 3 31 01.09	−1.87	1.005770
59 09 15.71	6827.21083	2		11 30 59.408	+.107		+ 3 07 59.75	−1.04	1.005497
59 09 17.71	6829.21034	2		11 38 09.500	+.021		+ 2 21 46.31	−0.01	1.004951
59 09 18.71	6830.21009	3		11 41 44.688	+.133		+ 1 58 32.58	−2.10	1.004678
59 09 19.70	6831.20984	1		11 45 19.782	+.125		+ 1 35 19.47	−0.95	1.004405
59 09 20.70	6832.20960	1		11 48 54.881	+.076		+ 1 12 03.52	−0.43	1.004131
59 09 21.70	6833.20935	6		11 52 30.095	+.069		+ 0 48 43.92	−1.76	1.003856
59 09 22.70	6834.20911	1		11 56 05.388	+.044		+ 0 25 25.02	−0.70	1.003581
59 09 23.70	6835.20886	5		11 59 40.869	+.101		+ 0 02 03.14	−1.48	1.003306
59 09 24.70	6836.20862	2		12 03 16.447	+.114		− 0 21 18.09	−0.65	1.003030
59 10 04.70	6846.20633	1		12 39 23.883	+.084		− 4 14 30.99	−0.65	1.000196
59 10 05.70	6847.20612	2		12 43 02.199	+.084		− 4 37 39.31	−0.39	0.999903
59 10 06.70	6848.20592	3		12 46 40.942	+.157		− 5 00 45.15	−1.03	0.999610
59 10 12.70	6854.20477	6		13 08 41.254	+.056		− 7 17 41.77	+0.25	0.997845
59 10 16.70	6858.20412	2		13 23 30.967	+.055		− 8 47 06.18	−1.18	0.996693
59 10 17.70	6859.20398	1		13 27 14.802	+.074		− 9 09 07.34	+0.62	0.996410
59 10 18.70	6860.20384	1		13 30 59.187	+.060		− 9 31 03.69	−0.55	0.996130
59 10 19.70	6861.20370	8		13 34 44.206	+.057		− 9 52 50.70	−0.61	0.995851
59 10 20.70	6862.20358	6		13 38 29.943	+.131		−10 14 28.68	−0.24	0.995575
59 10 26.70	6868.20299	1		14 01			−12 20 57.42	−0.48	0.993958
59 10 28.70	6870.20286	5		14 09 00.144	+.157		−13 01 41.17	−1.17	0.993431
59 10 29.70	6871.20281	2		14 12 52.221	+.131		−13 21 44.93	−1.34	0.993169
59 11 03.70	6876.20269	6		14 32 24.553	+.132		−14 58 44.31	+0.32	0.991867
59 11 08.70	6881.20280	1		14 52 16.910	+.101		−16 29 39.50	−0.32	0.990599
59 11 09.70	6882.20285	2		14 56 17.852	+.111		−16 47 03.89	−2.35	0.990352
59 11 10.70	6883.20291	2		15 00 19.623	+.127		−17 04 07.24	−0.54	0.990109
59 11 12.70	6885.20306	8		15 08 25.575	+.053		−17 37 22.60	+1.55	0.989636
59 11 13.70	6886.20315	3		15 12 29.897	+.095		−17 53 35.67	−0.06	0.989405
59 11 19.70	6892.20389	8		15 37 13.412	+.126		−19 24 00.01	−1.08	0.988115
59 11 20.70	6893.20404	6		15 41 23.645	+.155		−19 37 51.28	+0.37	0.987915
59 11 22.70	6895.20439	1		15 49 46.468	+.076		−20 04 32.83	+0.08	0.987529
59 12 01.70	6904.20638	8		16 28 08.294	+.061		−21 45 48.15	+0.35	0.985964
59 12 02.70	6905.20665	3		16 32 27.594	+.043		−21 55 03.03	−0.16	0.985804
59 12 03.70	6906.20692	1		16 36 47.557	+.072		−22 03 50.53	+1.39	0.985647
59 12 04.70	6907.20719	2		16 41 08.155	+.153		−22 12 15.65	−0.24	0.985494
59 12 08.70	6911.20836	1		16 58 35.502	+.053		−22 41 27.04	+1.69	0.984920
59 12 09.70	6912.20867	6		17 02 58.659	+.135		−22 47 39.80	+0.88	0.984788
59 12 14.71	6917.21027	8		17 24 59.953	+.024		−23 11 52.99	−0.28	0.984213
59 12 15.71	6918.21060	6		17 29 25.343	+.122		−23 15 19.75	+0.75	0.984116
59 12 16.71	6919.21093	2		17 33 50.866	+.095		−23 18 20.00	+0.46	0.984024
60 01 08.71	6942.21862	1		19 15 37.234	+.089		−22 18 14.95	+0.42	0.983294
60 01 09.71	6943.21891	1		19 19 59.220	+.114		−22 10 08.86	+0.44	0.983318
60 01 16.72	6950.22077	1		19 50 16.365	−.004		−21 01 29.46	+2.34	0.983658

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

SUN

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
60 01 17.72	6951.22101	1		19 54 33.482	+.082		-20 50 02.44	+2.26	0.983731
60 01 21.72	6955.22187	6		20 11 34.543	+.037		-20 00 20.85	+0.41	0.984083
60 01 25.72	6959.22260	6		20 28 24.021	+.162		-19 04 35.71	+2.34	0.984510
60 01 26.72	6960.22276	8		20 32 34.384	+.114		-18 49 47.65	+1.11	0.984626
60 01 27.72	6961.22291	2		20 36 43.925	+.045		-18 34 37.73	+1.22	0.984746
60 01 30.72	6964.22331	1		20 49 07.875	+.045		-17 47 08.98	+0.83	0.985124
60 02 02.72	6967.22362	6		21 01 24.309	+.030		-16 56 48.64	+1.19	0.985531
60 02 03.72	6968.22370	8		21 05 28.108	+.019		-16 39 25.39	+1.67	0.985675
60 02 04.72	6969.22377	3		21 09 31.130	+.071		-16 21 46.52	+0.41	0.985822
60 02 06.72	6971.22389	1		21 17 34.551	+.049		-15 45 34.64	+1.65	0.986130
60 02 16.72	6981.22394	2		21 57 03.758	+.035		-12 29 39.85	+1.34	0.987966
60 02 19.72	6984.22378	6		22 08 40.113	+.037		-11 26 39.92	+1.03	0.988611
60 02 20.72	6985.22372	1		22 12 30.990	+.131		-11 05 17.44	+1.14	0.988833
60 02 23.72	6988.22347	2		22 23 59.436	+.047		-10 00 09.47	+1.00	0.989517
60 02 26.72	6991.22316	6		22 35 22.473	+.042		- 8 53 38.79	+1.13	0.990220
60 02 27.72	6992.22305	1		22 39 09.014	+.067		- 8 31 11.59	+1.83	0.990456
60 03 01.72	6995.22266	2		22 50 25.326	+.121		- 7 23		0.991177
60 03 08.72	7002.22157	2		23 16 26.107	+.062		- 4 41 01.38	+0.89	0.992924
60 03 13.72	7007.22065	1		23 34 49.239	+.088		- 2 43 19.18	+0.47	0.994252
60 03 14.72	7008.22045	9		23 38 28.932	+.046		- 2 19 39.91	+0.63	0.994526
60 03 15.72	7009.22026	3		23 42 08.468	+.091		- 1 55 59.92	+0.14	0.994805
60 03 19.71	7013.21945	1		23 56 44.575	+.103		- 0 21 09.98	+1.16	0.995939
60 03 22.71	7016.21882	2		0 07 40.212	+.031		+ 0 49 53.65	+0.93	0.996806
60 03 23.71	7017.21861	6		0 11 18.685	+.088		+ 1 13 32.97	+1.45	0.997095
60 03 24.71	7018.21840	3		0 14 57.020	+.055		+ 1 37 08.86	+0.37	0.997385
60 03 25.71	7019.21819	6		0 18 35.381	+.087		+ 2 00 45.03	+1.81	0.997674
60 03 28.71	7022.21756	8		0 29 30.297	+.021		+ 3 11 10.48	+0.35	0.998534
60 03 29.71	7023.21735	2		0 33 08.638	-.017		+ 3 34 32.24	+0.07	0.998819
60 04 02.71	7027.21652	1		0 47 42.898	+.052		+ 5 07 16.72	+0.54	0.999953
60 04 06.71	7031.21571	2		1 02 18.994	+.009		+ 6 38 32.90	+0.81	1.001080
60 04 07.71	7032.21552	8		1 05 58.494	+.038		+ 7 01 05.17	+0.45	1.001361
60 04 10.71	7035.21494	1		1 16 58.217	-.011		+ 8 07 58.66	+0.76	1.002209
60 04 11.71	7036.21475	9		1 20 38.624	-.051		+ 8 29 59.87	+0.21	1.002493
60 04 12.71	7037.21457	6		1 24 19.466	+.050		+ 8 51 54.27	+1.37	1.002777
60 04 13.71	7038.21439	9		1 28 00.475	-.005		+ 9 13 38.60	+1.25	1.003062
60 04 14.71	7039.21422	1		1 31 41.897	+.007		+ 9 35 13.70	+1.10	1.003347
60 04 15.71	7040.21405	6		1 35 23.697	+.039		+ 9 56 38.96	+0.53	1.003632
60 04 16.71	7041.21388	1		1 39 05.788	-.011		+10 17 53.99	-0.50	1.003918
60 04 20.71	7045.21326	1		1 53 58.483	+.015		+11 41 15.04	+0.80	1.005049
60 04 21.71	7046.21312	2		1 57 42.784	+.061		+12 01 36.08	-0.33	1.005328
60 04 22.71	7047.21298	6		2 01			+12 21 47.47	+0.76	1.005603
60 04 23.71	7048.21285	1		2 05 12.628	+.021		+12 41 45.11	+0.14	1.005875
60 04 26.71	7051.21249	3		2 16 31.149	+.114		+13 40 23.52	+0.01	1.006676
60 04 29.71	7054.21218	1		2 27 53.965	+.031		+14 37 00.97	+0.30	1.007447
60 05 02.71	7057.21193	9		2 39 21.545	+.070		+15 31 28.48	+0.82	1.008189
60 05 03.71	7058.21186	8		2 43 11.754	+.046		+15 49 07.64	+1.45	1.008431
60 05 06.71	7061.21167	9		2 54 45.697	+.067		+16 40 26.79	+0.99	1.009141
60 05 07.71	7062.21163	9		2 58 38.029	-.005		+16 56 59.89	+0.57	1.009373
60 05 14.71	7069.21147	9		3 26 00.705	-.034		+18 44 42.33	-0.22	1.010956
60 05 15.71	7070.21148	1		3 29 57.743	+.007		+18 58 51.94	-0.44	1.011175
60 05 16.71	7071.21149	3		3 33 55.363	+.045		+19 12 41.75	-1.23	1.011391
60 05 19.71	7074.21157	9		3 45			+19 52 16.69	-0.27	1.012021
60 05 20.71	7075.21160	2		3 49 51.459	+.038		+20 04 48.18	+0.08	1.012224
60 05 26.71	7081.21197	9		4 14 01.941	-.023		+21 12 34.27	-1.08	1.013341
60 05 31.71	7086.21242	9		4 34 24.013	+.064		+21 59 03.11	-0.37	1.014134

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

SUN

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
60 06 01.71	7087.21252	8		4 38 29.578	-.005		+22 07 12.81	-0.10	1.014278
60 06 02.71	7088.21263	2		4 42			+22 14 58.85	-0.37	1.014418
60 06 05.71	7091.21298	6		4 54 55.793	+.127		+22 35 57.58	+0.19	1.014815
60 06 07.71	7093.21323	8		5 03 10.598	-.006		+22 47 56.99	-0.45	1.015062
60 06 08.71	7094.21337	2		5 07 18.483	+.001		+22 53 21.21	-0.26	1.015180
60 06 09.71	7095.21350	8		5 11 26.611	-.011		+22 58 20.76	-0.69	1.015296
60 06 15.71	7101.21435	1		5 36 19.889	-.004		+23 19 48.45	-0.41	1.015928
60 06 16.71	7102.21450	3		5 40 29.267	-.062		+23 21 57.04	-0.32	1.016020
60 06 17.71	7103.21465	9		5 44			+23 23 40.76	-0.37	1.016107
60 06 20.71	7106.21510	8		5 57 07.864	+.030		+23 26 23.31	-0.46	1.016337
60 06 21.71	7107.21526	2		6 01 17.591	+.063		+23 26 27.82	-0.58	1.016402
60 06 24.71	7110.21571	2		6 13 46.324	-.009		+23 24 12.95	-0.75	1.016564
60 06 25.71	7111.21586	1		6 17 55.824	+.077		+23 22 39.27	-0.05	1.016605
60 06 26.71	7112.21600	1		6 22 05.099	+.081		+23 20 40.05	-0.24	1.016642
60 06 27.71	7113.21615	8		6 26 14.182	+.049		+23 18 16.32	-0.33	1.016672
60 06 28.71	7114.21629	9		6 30 23.110	+.060		+23 15 27.96	-0.50	1.016696
60 07 04.71	7120.21708	1		6 55 11.257	+.054		+22 50 08.97	+0.17	1.016732
60 07 05.71	7121.21720	9		6 59 18.177	+.043		+22 44 31.45	+0.03	1.016722
60 07 06.71	7122.21732	8		7 03 24.740	+.042		+22 38 29.56	-0.77	1.016709
60 07 07.71	7123.21743	2		7 07 31.025	+.133		+22 32 05.17	-0.55	1.016692
60 07 08.71	7124.21754	9		7 11 36.657	-.036		+22 25 18.07	+0.41	1.016672
60 07 09.71	7125.21764	1		7 15 42.173	+.089		+22 18 05.85	-0.58	1.016649
60 07 12.71	7128.21792	9		7 27 55.798	+.087		+21 54 14.86	-0.22	1.016560
60 07 13.71	7129.21800	1		7 31 59.448	+.080		+21 45 31.92	-0.66	1.016523
60 07 15.71	7131.21815	2		7 40			+21 26 59.99	-0.87	1.016436
60 07 16.71	7132.21821	9		7 44 07.528	+.029		+21 17 12.46	+0.50	1.016385
60 07 17.71	7133.21827	1		7 48 09.255	+.029		+21 07 01.55	+0.16	1.016330
60 07 18.71	7134.21832	9		7 52 10.446	+.009		+20 56 28.55	-0.74	1.016269
60 07 23.71	7139.21850	1		8 12			+19 58 34.81	-0.61	1.015883
60 07 24.71	7140.21851	9		8 16 06.233	+.022		+19 45 58.38	-1.39	1.015789
60 07 25.71	7141.21852	8		8 20 03.482	-.009		+19 33 04.35	+0.05	1.015688
60 07 30.71	7146.21846	1		8 39 40.744	+.059		+18 23 40.78	-0.57	1.015104
60 07 31.71	7147.21842	9		8 43 34.276	+.022		+18 08 52.94	-0.58	1.014973
60 08 02.71	7149.21833	9		8 51 19.574	+.059		+17 38 24.46	-0.35	1.014697
60 08 03.71	7150.21828	6		8 55 11.234	+.020		+17 22 44.21	-0.42	1.014554
60 08 04.71	7151.21821	1		8 59 02.310	+.024		+17 06 47.44	-0.16	1.014408
60 08 05.71	7152.21814	4		9 02 52.635	-.113		+16 50 33.51	-0.48	1.014259
60 08 10.71	7157.21769	9		9 21 56.218	+.086		+15 25 27.05	-0.32	1.013473
60 08 15.71	7162.21707	2		9 40			+13 54 09.51	-0.11	1.012614
60 08 17.71	7164.21679	6		9 48 13.966	+.186		+13 16 01.28	-1.90	1.012243
60 08 18.71	7165.21663	4		9 51 57.089	-.033		+12 56		1.012051
60 08 19.71	7166.21648	4		9 55 39.992	+.018		+12 37 06.38	+0.29	1.011855
60 08 20.71	7167.21631	1		9 59 22.410	+.053		+12 17 19.17	-0.27	1.011654
60 08 21.71	7168.21614	1		10 03 04.302	+.029		+11 57 19.85	-1.25	1.011448
60 08 23.71	7170.21579	6		10 10			+11 16 50.10	-0.56	1.011024
60 08 24.71	7171.21560	2		10 14 07.320	+.012		+10 56 18.00	-1.27	1.010804
60 08 25.71	7172.21542	8		10 17 47.492	+.037		+10 35 36.25	-1.25	1.010580
60 08 26.71	7173.21522	4		10 21 27.229	+.042		+10 14 45.29	-0.44	1.010353
60 08 27.71	7174.21502	1		10 25 06.563	+.039		+ 9 53 43.40	-0.81	1.010122
60 08 28.71	7175.21482	1		10 28 45.518	+.049		+ 9 32 32.43	-0.85	1.009886
60 09 01.71	7179.21397	4		10 43 17.781	+.094		+ 8 06 21.12	-1.50	1.008917
60 09 02.71	7180.21374	6		10 46 55.024	+.091		+ 7 44 28.94	-0.84	1.008668
60 09 03.71	7181.21352	1		10 50 31.945	+.061		+ 7 22 30.12	+0.58	1.008419
60 09 04.71	7182.21329	1		10 54 08.682	+.108		+ 7 00 21.42	-0.72	1.008169
60 09 07.71	7185.21258	8		11 04			+ 5 53 18.69	-1.57	1.007414

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

SUN

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
60 09 08.71	7186.21234	6		11 08 33.162	+.031		+ 5 30 45.98	-1.41	1.007160
60 09 14.71	7192.21088	8		11 30 05.959	+.104		+ 3 13 42.05	-1.32	1.005608
60 09 15.71	7193.21064	4		11 33 41.090	+.001		+ 2 50 38.44	+0.44	1.005342
60 09 16.71	7194.21039	1		11 37 16.397	+.090		+ 2 27 28.07	-1.18	1.005074
60 09 27.70	7205.20773	3		12 16 47.932	+.097		- 1 49 07.80	-1.35	1.001972
60 10 02.70	7210.20660	1		12 34 52.384	+.058		- 3 45 37.71	-0.85	1.000509
60 10 03.70	7211.20638	9		12 38 30.091	+.035		- 4 08 48.80	-0.42	1.000217
60 10 10.70	7218.20498	9		13 04 04.908	+.036		- 6 49 27.14	-0.28	0.998218
60 10 26.70	7234.20294	6		14 04 12.649	+.146		-12 36 26.48	-0.14	0.993754
60 10 30.70	7238.20273	1		14 19 41.374	+.090		-13 56 26.38	-0.70	0.992667
60 11 02.70	7241.20268	9		14 31 26.006	+.091		-14 54 06.03	0.00	0.991883
60 11 04.70	7243.20268	9		14 39 19.837	+.130		-15 31 21.77	-0.91	0.991379
60 11 08.70	7247.20282	4		14 55 17.473	+.105		-16 42 42.83	+0.51	0.990414
60 11 09.70	7248.20287	9		14 59 19.064	+.138		-16 59 52.76	-0.08	0.990182
60 11 11.70	7250.20302	9		15 07 24.741	+.093		-17 33 19.14	-0.04	0.989728
60 11 12.70	7251.20311	1		15 11 28.889	+.086		-17 49 35.75	-0.41	0.989505
60 11 13.70	7252.20321	1		15 15 33.936	+.108		-18 05 32.65	+0.37	0.989285
60 11 14.70	7253.20331	1		15 19 39.803	+.075		-18 21 11.40	+0.47	0.989068
60 11 17.70	7256.20370	4		15 32 02.572	-.014		-19 06 10.54	+0.41	0.988431
60 11 19.70	7258.20400	1		15 40 22.124	+.072		-19 34 28.41	+0.23	0.988018
60 11 20.70	7259.20417	1		15 44 33.063	+.041		-19 48 05.50	+0.31	0.987813
60 11 21.70	7260.20434	8		15 48 44.867	+.064		-20 01 21.44	-0.03	0.987611
60 11 26.70	7265.20535	9		16 09 55.280	+.127		-21 02 01.71	+0.39	0.986648
60 12 02.70	7271.20684	9		16 35 42.938	+.066		-22 01 43.83	+0.59	0.985636
60 12 03.70	7272.20711	1		16 40 03.161	+.077		-22 10 13.70	+0.20	0.985486
60 12 04.70	7273.20739	1		16 44 23.949	+.059		-22 18 18.89	-1.29	0.985341
60 12 05.70	7274.20767	9		16 48 45.412	+.149		-22 25 55.73	-0.38	0.985203
60 12 09.70	7278.20888	2		17 06 15.996	-.008		-22 52 02.37	-0.24	0.984704
60 12 10.70	7279.20920	1		17 10 40.001	+.129		-22 57 24.81	+1.85	0.984593
60 12 28.71	7297.21531	9		18 30 27.997	+.184		-23 15 24.01	+2.17	0.983286
60 12 30.71	7299.21599	6		18 39 19.333	+.151		-23 08 02.95	+0.41	0.983236
61 01 04.71	7304.21760	6		19 01 22.518	+.206		-22 41 32.97	-0.23	0.983220
61 01 05.71	7305.21792	2		19 05			-22 34 51.84	+1.07	0.983236
61 01 09.71	7309.21911	8		19 23 15.341	+.146		-22 03 46.78	+0.64	0.983358
61 01 10.71	7310.21939	9		19 27 36.357	+.095		-21 54 54.84	+0.76	0.983403
61 01 11.71	7311.21967	1		19 31 56.812	+.032		-21 45 36.11	+2.07	0.983452
61 01 13.72	7313.22020	9		19 40 36.179	+.112		-21 25 45.42	+1.90	0.983563
61 01 28.72	7328.22315	1		20 43 59.795	+.095		-18 07 16.00	-0.06	0.984900
61 01 29.72	7329.22327	1		20 48 06.979	+.082		-17 51 11.01	+0.84	0.985028
61 01 30.72	7330.22338	9		20 52 13.338	+.065		-17 34 47.84	+0.80	0.985161
61 02 05.72	7336.22386	1		21 16 34.311	+.025		-15 50 10.10	+0.53	0.986077
61 02 06.72	7337.22391	2		21 20 35.061	+.097		-15 31 43.52	+1.29	0.986248
61 02 09.72	7340.22400	4		21 32 32.388	+.057		-14 34 52.62	+0.72	0.986789
61 02 10.72	7341.22401	9		21 36 29.985	+.070		-14 15 25.48	+0.76	0.986976
61 02 15.72	7346.22394	4		21 56 06.699	+.071		-12 34 45.36	+0.17	0.987959
61 02 16.72	7347.22390	3		21 59 59.860	+.101		-12 13 58.91	+0.44	0.988162
61 02 17.72	7348.22385	9		22 03			-11 52 59.93	+1.54	0.988367
61 02 26.72	7357.22307	1		22 38			- 8 36 45.18	-0.37	0.990338
61 02 27.72	7358.22295	6		22 41 59.492	+.049		- 8 14 12.52	+0.67	0.990574
61 03 02.72	7361.22255	1		22 53 14.132	+.063		- 7 05		0.991305
61 03 03.72	7362.22240	9		22 56 57.981	+.041		- 6 42 58.43	+0.36	0.991556
61 03 10.72	7369.22124	4		23 22 53.387	+.054		- 3 59		0.993409
61 03 11.72	7370.22106	1		23 26 34.203	+.079		- 3 36 21.67	+1.06	0.993682
61 03 20.71	7379.21929	6		23 59 30.165	+.060		- 0 03 14.72	+0.46	0.996173
61 03 25.71	7384.21825	1		0 17 42.273	+.078		+ 1 54 58.87	+0.14	0.997563

SUN

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
61 03 27.71	7386.21782	4		0 24 58.720	+.121		+ 2 42 01.48	+1.14	0.998125
61 03 29.71	7388.21740	8		0 32 15.051	+.048		+ 3 28 47.68	−0.97	0.998692
61 03 30.71	7389.21719	4		0 35 53.277	+.015		+ 3 52 05.87	−1.07	0.998978
61 04 02.71	7392.21656	1		0 46 48.571	+.029		+ 5 01 34.48	+0.06	0.999843
61 04 07.71	7397.21555	2		1 05 03.840	+.080		+ 6 55 29.89	+0.45	1.001306
61 04 20.71	7410.21330	3		1 53 04.121	−.056		+11 36 14.92	−0.72	1.004980
61 05 02.71	7422.21193	6		2 38 24.343	+.011		+15 27 05.31	+1.68	1.008088
61 05 03.71	7423.21186	4		2 42 14.428	+.074		+15 44 44.70	−0.78	1.008341
61 05 04.71	7424.21179	9		2 46 04.957	+.022		+16 02 12.24	+0.46	1.008591
61 05 05.71	7425.21173	2		2 49 56.049	−.044		+16 19 23.80	+1.65	1.008840
61 05 09.71	7429.21155	6		3 05 26.498	−.056		+17 25 18.93	−0.06	1.009813
61 05 15.71	7435.21148	1		3 28 59.903	+.010		+18 55 26.57	+0.19	1.011160
61 05 16.71	7436.21149	6		3 32 57.502	+.029		+19 09 23.19	+1.02	1.011369
61 05 17.71	7437.21151	4		3 36			+19 22 58.73	+0.19	1.011574
61 05 20.71	7440.21160	1		3 48 53.287	+.024		+20 01 48.20	−0.07	1.012160
61 05 21.71	7441.21164	9		3 52 53.590	+.049		+20 14 03.75	−0.35	1.012349
61 05 22.71	7442.21169	9		3 56 54.391	+.054		+20 26 00.05	+0.98	1.012532
61 05 23.71	7443.21175	6		4 00 55.708	+.071		+20 37 33.20	+0.17	1.012712
61 05 24.71	7444.21181	4		4 04 57.471	+.039		+20 48 44.97	−0.68	1.012889
61 05 28.71	7448.21210	1		4 21 09.447	+.051		+21 29 59.32	+0.35	1.013564
61 05 30.71	7450.21228	1		4 29 18.262	+.138		+21 48 21.79	−0.34	1.013886
61 05 31.71	7451.21238	4		4 33 23.203	+.048		+21 56 59.83	−0.02	1.014042
61 06 01.71	7452.21248	2		4 37 28.668	+.072		+22 05 15.18	+0.56	1.014197
61 06 02.71	7453.21259	9		4 41 34.518	+.073		+22 13 06.09	−0.24	1.014348
61 06 04.71	7455.21282	1		4 49 47.409	+.092		+22 27 40.15	+0.27	1.014642
61 06 05.71	7456.21294	9		4 53 54.368	+.071		+22 34 22.13	+0.71	1.014783
61 06 07.71	7458.21319	2		5 02 09.320	+.035		+22 46 31.93	−1.36	1.015052
61 06 08.71	7459.21332	4		5 06 17.332	+.089		+22 52 03.74	+0.33	1.015179
61 06 12.71	7463.21388	9		5 22 51.818	+.121		+23 10 01.65	−0.16	1.015636
61 06 13.71	7464.21403	6		5 27 00.895	+.068		+23 13 30.35	−0.10	1.015736
61 06 14.71	7465.21417	2		5 31 10.209	+.095		+23 16 34.06	−0.54	1.015829
61 06 16.71	7467.21447	9		5 39 29.082	+.039		+23 21 28.96	+0.11	1.016000
61 06 18.71	7469.21477	1		5 47 48.343	+.077		+23 24 43.15	−1.09	1.016149
61 06 22.71	7473.21538	1		6 04 26.850	+.071		+23 26		1.016384
61 06 23.71	7474.21552	9		6 08 36.298	+.017		+23 25 38.22	−0.06	1.016431
61 06 24.71	7475.21567	1		6 12 45.815	+.127		+23 24 34.60	−0.02	1.016474
61 06 29.71	7480.21639	8		6 33 30.500	−.076		+23 13 06.04	−0.37	1.016638
61 06 30.71	7481.21653	2		6 37 39.054	+.062		+23 09 34.76	−0.51	1.016661
61 07 01.71	7482.21666	1		6 41 47.223	+.048		+23 05 40.17	+0.43	1.016680
61 07 08.71	7489.21751	9		7 10 36.533	+.016		+22 26 58.40	−0.94	1.016697
61 07 09.71	7490.21761	1		7 14 42.229	+.035		+22 19 53.94	+0.50	1.016678
61 07 10.71	7491.21771	8		7 18 47.528	+.054		+22 12 23.57	−0.89	1.016654
61 07 11.71	7492.21781	6		7 22 52.459	+.127		+22 04 32.39	−0.27	1.016624
61 07 14.71	7495.21807	6		7 35 04.282	+.144		+21 38 40.30	−1.02	1.016498
61 07 18.71	7499.21832	4		7 51 12.789	.000		+20 59 03.81	−0.15	1.016248
61 07 19.71	7500.21837	2		7 55			+20 48 16.12	+0.21	1.016172
61 07 21.71	7502.21845	9		8 03 13.636	+.151		+20 25 35.88	−1.07	1.016005
61 07 24.71	7505.21852	8		8 15 09.016	+.112		+19 49 05.11	−0.07	1.015723
61 07 25.71	7506.21853	2		8 19 06.300	+.126		+19 36 14.11	−0.65	1.015622
61 07 26.71	7507.21853	8		8 23 02.917	+.073		+19 23 03.94	−0.96	1.015518
61 07 30.71	7511.21846	1		8 38 43.567	+.083		+18 27 15.04	−0.55	1.015072
61 08 01.71	7513.21839	0		8 46 30.255	+.037		+17 57 29.09	−1.75	1.014831
61 08 04.71	7516.21823	4		8 58 05.936	+.013		+17 10 41.24	−0.95	1.014441
61 08 07.71	7519.21801	8		9 09 36.461	+.069		+16 21 23.04	+0.12	1.014010
61 08 09.71	7521.21783	6		9 17 13.786	−.018		+15 47 10.46	+0.01	1.013698

SUN

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
61 08 10.71	7522.21773	2		9 21 01.721	+.069		+15 29 41.28	-0.01	1.013534
61 08 11.71	7523.21762	4		9 24 48.922	-.007		+15 11 56.66	-0.51	1.013366
61 08 12.71	7524.21750	3		9 28 35.711	+.077		+14 53 59.39	+0.78	1.013192
61 08 13.71	7525.21738	1		9 32 21.801	+.035		+14 35 44.61	-1.14	1.013013
61 08 14.71	7526.21726	8		9 36 07.433	+.084		+14 17 17.86	-1.08	1.012829
61 08 15.71	7527.21712	0		9 39 52.378	-.007		+13 58 36.39	-2.21	1.012640
61 08 16.71	7528.21699	6		9 43 36.928	+.052		+13 39 43.95	-0.92	1.012447
61 08 17.71	7529.21684	4		9 47 20.857	+.033		+13 20 37.86	-0.37	1.012250
61 08 18.71	7530.21669	2		9 51 04.350	+.096		+13 01 18.18	-0.76	1.012049
61 08 23.71	7535.21584	2		10 09			+11 21 43.62	-0.59	1.010993
61 08 28.71	7540.21487	0		10 27			+ 9 37 41.49	+0.23	1.009885
61 08 29.71	7541.21467	6		10 31 31.169	+.102		+ 9 16 22.65	-1.18	1.009660
61 08 30.71	7542.21445	0		10 35			+ 8 54 57.74	+0.33	1.009432
61 08 31.71	7543.21424	0		10 38			+ 8 33 23.25	+0.95	1.009201
61 09 02.71	7545.21380	1		10 46			+ 7 49 47.31	-0.38	1.008734
61 09 06.71	7549.21289	6		11 00			+ 6 21 08.67	-0.44	1.007765
61 09 10.71	7553.21194	9		11 14 53.376	-.016		+ 4 50 49.26	-0.15	1.006742
61 09 11.71	7554.21170	1		11 18 29.009	-.005		+ 4 28 00.60	-0.63	1.006478
61 09 12.71	7555.21145	2		11 22 04.532	+.017		+ 4 05 07.77	-0.58	1.006212
61 09 13.71	7556.21121	9		11 25 39.958	+.050		+ 3 42 10.34	-0.82	1.005942
61 09 16.71	7559.21047	1		11 36 25.712	+.036		+ 2 32 56.26	-1.04	1.005116
61 09 18.70	7561.20998	2		11 43 36.053	+.030		+ 1 46 32.40	-0.57	1.004555
61 09 21.70	7564.20924	6		11 54 21.738	+.090		+ 0 36 40.12	-0.34	1.003707
61 09 22.70	7565.20899	9		11 57 57.081	+.113		+ 0 13		1.003424
61 09 23.70	7566.20875	1		12 01 32.466	+.075		- 0 10 01.20	+0.04	1.003141
61 09 29.70	7572.20733	9		12 23 08.536	+.072		- 2 30 10.75	-0.29	1.001456
61 09 30.70	7573.20710	1		12 26 45.378	+.084		- 2 53 30.22	-0.92	1.001176
61 10 04.70	7577.20623	8		12 41 15.758	+.034		- 4 26 25.36	-1.38	1.000052
61 10 05.70	7578.20602	6		12 44 54.389	+.191		- 4 49 31.98	-1.26	0.999769
61 10 06.70	7579.20581	9		12 48 33.204	+.147		- 5 12 34.46	-0.61	0.999486
61 10 07.70	7580.20561	9		12 52 12.315	+.003		- 5 35 32.90	+0.24	0.999202
61 10 10.70	7583.20504	2		13 03 12.858	+.167		- 6 44 05.04	-0.86	0.998343
61 10 11.70	7584.20487	8		13 06 53.854	+.123		- 7 06 44.90	-0.66	0.998054
61 10 12.70	7585.20469	6		13 10 35.339	+.083		- 7 29 19.50	-1.02	0.997765
61 10 13.70	7586.20452	9		13 14 17.404	+.117		- 7 51 46.64	-0.09	0.997476
61 10 15.70	7588.20421	1		13 21 42.916	+.004		- 8 36 22.73	-0.03	0.996897
61 10 17.70	7590.20391	6		13 29 10.756	+.030		- 9 20 29.43	-0.18	0.996318
61 10 18.70	7591.20378	8		13 32 55.504	+.015		- 9 42 21.11	-0.58	0.996031
61 10 19.70	7592.20365	2		13 36 40.902	+.060		-10 04 03.78	-0.49	0.995745
61 10 23.70	7596.20321	8		13 51 48.707	+.095		-11 29 22.06	-1.06	0.994625
61 10 24.70	7597.20311	6		13 55 37.321	+.078		-11 50 15.87	-0.61	0.994352
61 10 25.70	7598.20303	8		13 59 26.668	+.089		-12 10 58.14	+0.67	0.994083
61 10 27.70	7600.20289	9		14 07 07.597	+.108		-12 51 53.11	-1.17	0.993552
61 10 29.70	7602.20278	1		14 14 51.525	+.081		-13 31 56.46	+0.85	0.993032
61 10 31.70	7604.20272	2		14 22			-14 11 13.63	-1.86	0.992522
61 11 01.70	7605.20269	8		14 26 33.404	+.087		-14 30 28.20	+0.74	0.992271
61 11 17.70	7621.20368	9		15 31 03.311	+.121		-19 02 45.74	-1.33	0.988479
61 11 25.70	7629.20508	9		16 04 37.228	+.013		-20 47 51.24	-0.20	0.986895
61 11 28.70	7632.20575	2		16 17 25.438	+.112		-21 21 03.61	-1.74	0.986383
61 11 29.70	7633.20600	8		16 21 42.853	+.032		-21 31 19.26	-1.76	0.986222
61 11 30.70	7634.20624	3		16 26 01.083	+.061		-21 41 07.36	+1.25	0.986064
61 12 03.70	7637.20704	1		16 38 59.726	+.113		-22 08 13.14	-1.09	0.985617
61 12 08.70	7642.20850	9		17 00 49.339	+.185		-22 44 41.48	+0.48	0.984941
61 12 14.71	7648.21043	3		17 27 15.528	+.070		-23 13 43.57	+0.09	0.984241
61 12 15.71	7649.21076	6		17 31 41.026	+.089		-23 16 58.49	-1.10	0.984139

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

SUN

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
61 12 27.71	7661.21488	6		18 24 55.891	+.080		−23 19 05.14	+0.90	0.983370
61 12 29.71	7663.21555	2		18 33 47.824	+.081		−23 12 52.03	+0.82	0.983326
61 12 30.71	7664.21589	9		18 38 13.559	+.141		−23 09 04.19	+0.11	0.983312
61 12 31.71	7665.21622	9		18 42 38.963	+.105		−23 04 45.90	+1.99	0.983303
62 01 02.71	7667.21688	6		18 51 29.039	+.143		−22 54 52.04	+0.14	0.983298
62 01 04.71	7669.21752	1		19 00 17.662	+.067		−22 43 07.10	−0.28	0.983311
62 01 07.71	7672.21845	1		19 13 27.683	+.129		−22 22 06.82	−0.22	0.983358
62 01 11.71	7676.21960	3		19 30 53.678	+.034		−21 47 55.63	+2.00	0.983472
62 01 12.71	7677.21987	2		19 35 13.763	+.076		−21 38 21.21	−0.05	0.983512
62 01 14.72	7679.22039	1		19 43 51.970	+.127		−21 17 51.84	+1.18	0.983605
62 01 16.72	7681.22088	1		19 52 27.337	+.035		−20 55 45.83	+0.89	0.983721
62 01 17.72	7682.22111	2		19 56 44.034	+.052		−20 44		0.983787
62 01 23.72	7688.22233	6		20 22 08.646	+.131		−19 26 09.80	−1.53	0.984315
62 01 25.72	7690.22266	8		20 30 30.634	+.064		−18 57 11.01	+1.49	0.984538
62 02 06.72	7702.22390	6		21 19			−15 36 16.17	+2.26	0.986258
62 02 07.72	7703.22394	8		21 23 36.369	+.069		−15 17 37.50	+2.73	0.986422
62 02 10.72	7706.22401	1		21 35 32.115	+.103		−14 20 13.50	+0.82	0.986933
62 02 14.72	7710.22397	2		21 51 15.293	+.089		−13 00 22.17	−0.05	0.987666
62 02 15.72	7711.22394	8		21 55 09.130	+.036		−12 39 51.68	−0.03	0.987860
62 02 18.72	7714.22380	1		22 06 46.432	+.060		−11 37 07.85	+0.92	0.988470
62 02 24.72	7720.22330	1		22 29 42.809	+.043		− 9 26 57.08	+1.33	0.989812
62 03 01.72	7725.22270	6		22 48 33.696	+.071		− 7 34 29.63	+0.39	0.991033
62 03 02.72	7726.22257	9		22 52 18.278	+.014		− 7 11 38.09	+0.84	0.991285
62 03 03.72	7727.22242	1		22 56 02.446	+.021		− 6 48 41.69	+0.01	0.991538
62 03 04.72	7728.22228	1		22 59 46.251	+.134		− 6 25 37.66	+0.90	0.991793
62 03 07.72	7731.22180	2		23 10 54.562	−.021		− 5 15		0.992562
62 03 08.72	7732.22163	6		23 14 36.552	−.023		− 4 52 36.43	+0.05	0.992820
62 03 15.72	7739.22034	1		23 40 20.785	+.045		− 2 07 34.93	+2.66	0.994657
62 03 16.72	7740.22015	2		23 44 00.239	+.067		− 1 43 55.84	+0.35	0.994927
62 03 17.71	7741.21994	1		23 47 39.400	+.031		− 1 20 12.78	+1.33	0.995199
62 03 18.71	7742.21974	1		23 51 18.430	+.064		− 0 56 31.74	−0.09	0.995473
62 03 23.71	7747.21870	9		0 09 31.177	+.073		+ 1 01 53.60	−0.14	0.996878
62 03 24.71	7748.21849	1		0 13 09.331	−.041		+ 1 25 31.39	+0.30	0.997166
62 03 27.71	7751.21786	6		0 24 04.111	+.068		+ 2 36 09.98	+0.67	0.998038
62 03 28.71	7752.21765	9		0 27 42.339	+.051		+ 2 59 35.83	−0.52	0.998332
62 03 29.71	7753.21744	1		0 31 20.640	+.050		+ 3 23 00.18	+0.21	0.998625
62 04 10.71	7765.21502	6		1 15 10.263	+.025		+ 7 57 08.08	+0.93	1.002074
62 04 15.71	7770.21413	1		1 33 35.341	+.059		+ 9 46 11.89	−0.25	1.003459
62 04 17.71	7772.21379	1		1 40 59.546	−.007		+10 28 43.61	−0.50	1.004010
62 04 18.71	7773.21363	2		1 44 42.203	−.045		+10 49 44.97	+0.40	1.004285
62 04 19.71	7774.21348	6		1 48 25.382	+.053		+11 10 34.02	−0.27	1.004561
62 04 22.71	7777.21304	9		1 59 37.088	−.036		+12 11		1.005385
62 04 24.71	7779.21278	1		2 07 07.294	+.026		+12 51		1.005933
62 04 25.71	7780.21265	8		2 10 53.097	+.029		+13 11		1.006205
62 04 26.71	7781.21253	6		2 14 39.302	−.064		+13 30 56.41	+0.47	1.006476
62 04 27.71	7782.21242	9		2 18 26.198	+.019		+13 50 07.95	−0.63	1.006746
62 04 28.71	7783.21231	1		2 22 13.508	−.016		+14 09 07.99	+0.28	1.007013
62 05 03.71	7788.21188	1		2 41 18.304	−.005		+15 40 28.28	−0.30	1.008303
62 05 04.71	7789.21181	2		2 45 08.986	+.064		+15 57 59.40	−0.13	1.008551
62 05 09.71	7794.21156	6		3 04 30.306	−.020		+17 21 30.09	+0.28	1.009726
62 05 10.71	7795.21153	2		3 08 24.259	−.012		+17 37		1.009951
62 05 12.71	7797.21149	1		3 16 13.827	+.007		+18 08 10.03	+1.04	1.010390
62 05 14.71	7799.21147	8		3 24 05.621	+.013		+18 37 43.88	−0.07	1.010819
62 05 15.71	7800.21148	6		3 28 02.296	−.033		+18 52 02.36	−0.79	1.011029
62 05 16.71	7801.21149	2		3 31 59.638	+.029		+19 06 03.24	0.00	1.011237

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

SUN

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
62 05 18.71	7803.21152	9		3 39 55.906	+.069		+19 33 04.61	-0.13	1.011647
62 05 19.71	7804.21155	1		3 43 54.777	-.017		+19 46 04.63	-1.14	1.011848
62 05 22.71	7807.21167	8		3 55 54.975	+.032		+20 23 07.32	+0.75	1.012439
62 05 25.71	7810.21185	9		4 07 59.974	+.034		+20 56 59.68	+0.22	1.013008
62 05 26.71	7811.21192	1		4 12 02.638	-.015		+21 07 35.01	+0.80	1.013191
62 05 31.71	7816.21236	2		4 32 23.462	-.045		+21 54 56.49	-0.25	1.014042
62 06 01.71	7817.21246	7		4 36 29.098	+.064		+22 03		1.014197
62 06 02.71	7818.21257	1		4 40 35.008	+.040		+22 11 14.59	-0.68	1.014346
62 06 08.71	7824.21330	9		5 05 17.846	+.001		+22 50 49.72	+0.84	1.015128
62 06 09.71	7825.21344	1		5 09 26.020	+.033		+22 56 00.92	+0.04	1.015241
62 06 10.71	7826.21357	1		5 13 34.444	+.075		+23 00 48.03	-0.56	1.015349
62 06 16.71	7832.21443	1		5 38 28.333	+.039		+23 21 00.26	-0.56	1.015914
62 06 17.71	7833.21458	1		5 42 37.730	+.019		+23 22 55.94	-0.73	1.015995
62 06 18.71	7834.21473	6		5 46 47.177	-.016		+23 24 27.24	-0.45	1.016074
62 06 19.71	7835.21488	7		5 50 56.793	+.073		+23 25 32.34	-1.60	1.016150
62 06 27.71	7843.21607	9		6 24 12.300	+.040		+23 19 32.27	-0.01	1.016615
62 06 28.71	7844.21621	7		6 28 21.328	+.046		+23 16 55.53	-0.39	1.016652
62 06 29.71	7845.21636	2		6 32 30.203	+.064		+23 13 54.07	-1.05	1.016683
62 07 11.71	7857.21780	6		7 21 53.500	-.017		+22 06 31.40	+0.29	1.016588
62 07 13.71	7859.21797	4		7 30 01.782	-.017		+21 49 50.04	-0.38	1.016502
62 07 28.71	7874.21851	1		8 29 57.142	+.052		+18 59 11.45	-0.68	1.015385
62 07 31.71	7877.21844	7		8 41 40.868	+.028		+18 16 09.41	+0.63	1.015035
62 08 01.71	7878.21841	6		8 45 34.307	+.101		+18 01 11.15	-0.23	1.014907
62 08 02.71	7879.21836	9		8 49 27.063	+.105		+17 45 56.03	-0.41	1.014774
62 08 08.71	7885.21795	9		9 12			+16 08 31.97	-0.71	1.013869
62 08 11.71	7888.21765	1		9 23 54.199	+.070		+15 16 16.18	-1.03	1.013359
62 08 12.71	7889.21754	1		9 27 40.905	+.081		+14 58 21.60	-0.90	1.013182
62 08 18.71	7895.21672	1		9 50 09.449	+.049		+13 06 05.39	+0.24	1.012072
62 08 22.71	7899.21606	7		10 04 58.557	+.060		+11 46		1.011286
62 08 23.71	7900.21588	0		10 08 39.616	-.052		*+11 26 43.68	-1.06	1.011081
62 08 26.71	7903.21532	1		10 19 40.807	+.092		+10 24 53.48	-1.14	1.010444
62 08 27.71	7904.21513	1		10 23 20.323	+.044		+10 03 57.21	-0.34	1.010224
62 08 28.71	7905.21493	7		10 26 59.502	+.033		+ 9 42 49.73	-1.14	1.010001
62 08 29.71	7906.21472	1		10 30 38.278	-.026		+ 9 21		1.009772
62 08 31.71	7908.21430	6		10 37			+ 8 38 35.44	-0.95	1.009303

MERCURY

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
56 02 16.65	5520.15116	8	C	20 11 52.299	+.204	C	-19 00 07.19	0.00	0.891422
56 02 26.65	5530.15347	1	C	20 54 38.022	+.117	C	-18 08 53.83	+0.66	1.046875
56 02 29.65	5533.15603	8	C	21 10 09.711	+.044	C	-17 27 51.08	-0.70	1.088556
56 03 05.66	5538.16145	1	C	21 37 41.770	+.065	C	-15 53 10.27	+0.26	1.152372
56 03 21.68	5554.18504	0	C	23 14 50.912	+.149	C	- 7 17 05.48	-0.08	1.305673
56 03 25.69	5558.19226	1	C	23 41 02.547	+.135	C	- 4 19 52.86	+1.30	1.329042
56 07 26.74	5681.24158	4	C	8 57 11.668	-.103	C	+19 06 10.07	-0.58	1.332035
56 10 08.66	5755.16243	1	C	11 54 39.205	+.080	C	+ 1 42 59.70	+0.15	0.872665
56 10 09.66	5756.16145	3	C	11 57 10.362	+.037	C	+ 1 39 42.24	-0.03	0.900370
56 10 10.66	5757.16081	8	C	12 00 11.786	+.034	C	+ 1 31 31.59	+0.33	0.928455
56 10 11.66	5758.16049	2	C	12 03 40.869	+.080	C	+ 1 18 44.62	-0.23	0.956681
56 10 14.66	5761.16113	1	C	12 16 26.298	+.153	C	+ 0 16 28.06	-0.73	1.040078
56 10 16.66	5763.16259	1	C	12 26 25.399	+.202	C	- 0 41 10.00	+0.51	1.092898
56 12 03.74	5811.24118	1	C	17 29 08.731	+.106	C	-25 16 11.44	+0.47	1.367309
57 02 12.65	5882.15846	1	C	20 09 37.652	+.138		-20 46		1.144011

MERCURY

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
57 02 17.66	5887.16498	1	C	20 38 45.733	+.204	C	-19 44 24.34	+0.72	1.205574
57 02 18.66	5888.16641	1	C	20 44 45.863	+.148	C	-19 28 03.10	+1.09	1.216771
57 02 20.66	5890.16936	8	C	20 56 54.708	+.061	C	-18 51 30.01	-0.47	1.238060
57 02 21.67	5891.17088	2	C	21 03 03.090	+.085	C	-18 31 14.60	+0.71	1.248151
57 03 02.68	5900.18566	1		21 59		C	-14 30 22.15	+0.48	1.322028
57 03 03.68	5901.18741	1	C	22 06 20.171	+.161	C	-13 57 04.26	+0.88	1.328260
57 03 10.70	5908.20023	1	C	22 52 26.979	+.153	C	- 9 27 56.58	+0.21	1.358942
57 03 14.70	5912.20808	2	C	23 19 33.123	+.083	C	- 6 26 32.78	+0.42	1.364321
57 03 23.72	5921.22738	1	C	0 22 54.308	+.152	C	+ 1 24 49.03	+0.30	1.329342
57 03 31.74	5929.24559	1	C	1 20 44.038	+.067	C	+ 8 56 59.30	+0.14	1.220219
57 04 11.76	5940.26322	8	C	2 29 34.275	-.009	C	+17 14 33.43	+0.16	0.960392
57 04 14.76	5943.26439	1	C	2 43 04.881	-.058	C	+18 38 33.13	+0.53	0.884172
57 06 16.65	6006.15944	1	C	4 19 55.758	+.114	C	+19 44 27.47	+0.10	1.101213
57 06 20.66	6010.16918	2	C	4 49 45.852	+.192	C	+21 31 14.32	-0.29	1.176865
57 06 21.67	6011.17200	3	C	4 57 46.686	+.180	C	+21 55 42.90	+0.27	1.194586
57 07 10.74	6030.24115	8	C	7 52 32.031	+.090	C	+22 45 22.52	-1.05	1.309825
57 07 16.75	6036.25912	1	C	8 42 07.720	+.075	C	+20 04 30.32	-0.35	1.268958
57 08 02.78	6053.28631	3	C	10 28 25.676	+.195	C	+ 9 35 26.28	-1.31	1.056390
57 08 11.78	6062.28819	1	C	11 06 36.811	-.077	C	+ 4 05 45.83	-1.54	0.927391
57 08 13.78	6064.28739	2	C	11 13 20.634	-.117	C	+ 2 59 58.33	-2.09	0.898246
57 09 25.66	6107.16373	1	C	11 04 19.500	+.110	C	+ 7 01 28.18	-0.40	0.949537
57 09 27.66	6109.16428	5	C	11 12 59.738	+.095	C	+ 6 29 40.21	-0.75	1.006145
57 10 09.68	6121.18025	5	C	12 23 22.095	+.120	C	- 0 30 34.15	-0.54	1.283904
57 10 12.68	6124.18528	1	C	12 42 27.868	+.114	C	- 2 43 40.07	-1.24	1.329370
57 10 13.68	6125.18695	1	C	12 48 49.222	+.140	C	- 3 28 28.31	-1.53	1.342448
57 10 14.68	6126.18862	8	C	12 55 09.765	+.075	C	- 4 13 15.99	-0.19	1.354540
57 10 15.69	6127.19027	1	C	13 01 29.515	+.068	C	- 4 58 01.31	-1.29	1.365682
57 11 06.72	6149.22504	5	C	15 18 26.326	+.111	C	-19 10 27.41	-0.41	1.424176
57 11 07.72	6150.22665	3	C	15 24 42.179	+.074	C	-19 40 12.63	-0.11	1.419902
57 11 21.75	6164.25011	2	1	16 53 46.808	+.139	C	-24 44 42.67	+1.23	1.301753
57 12 02.76	6175.26711	2	1	18 01 41.276	+.086	C	-25 50 11.74	+1.45	1.123950
58 01 09.65	6213.15171	2	C	17 44 52.216	+.077	C	-20 55 32.10	+0.31	0.883070
58 02 08.67	6243.17942	1	C	20 23 09.753	+.134	C	-20 57 58.46	-0.40	1.319339
58 02 12.68	6247.18667	3	C	20 49 23.928	+.112	C	-19 39 47.34	+0.87	1.347081
58 03 07.73	6270.23247	1	C	23 26 13.013	+.218	C	- 5 07 54.14	+1.63	1.337952
58 03 08.73	6271.23459	1	C	23 33 13.094	+.132	C	- 4 15 01.90	+1.48	1.328144
58 03 10.73	6273.23882	2	1	23 47 12.819	+.020	S	- 2 26 46.58	+1.40	1.305104
58 03 12.74	6275.24301	3	C	0 01 08.875	+.072	C	- 0 36 00.24	+0.04	1.277227
58 03 28.76	6291.26352	2	C	1 33 50.603	+.103	C	+12 24 26.57	+1.27	0.905312
58 03 29.76	6292.26319	1	C	1 37 18.608	-.018	C	+12 54 24.93	-0.63	0.878930
58 04 01.76	6295.26053	8	C	1 45 17.459	-.037	C	+14 03 58.35	-1.65	0.803308
58 05 13.64	6337.14443	8	C	1 43 14.425	+.065	C	+ 7 12 50.27	-0.59	0.808871
58 05 14.64	6338.14418	1	C	1 46 49.138	+.133	C	+ 7 31 41.31	-1.10	0.824880
58 05 21.64	6345.14588	1	C	2 16 52.623	+.115	C	+10 24 42.20	-0.47	0.942906
58 05 22.64	6346.14660	2	2	2 21 51.671	+.032	N	+10 54 19.16	-0.31	0.960426
58 05 29.65	6353.15505	8	C	3 01 39.371	+.064	C	+14 44 43.66	-0.27	1.084813
58 06 04.66	6359.16739	2	C	3 43 07.840	+.237	C	+18 17 23.28	-0.27	1.187307
58 06 10.68	6365.18487	2	C	4 32 01.607	-.138	C	+21 34 50.11	-0.73	1.271863
58 06 25.74	6380.24174	1	C	6 53 17.058	+.093	C	+24 38 22.84	-1.08	1.297073
58 06 27.74	6382.24876	2	C	7 11 18.759	+.079	C	+24 17 47.57	-0.14	1.279252
58 06 29.75	6384.25532	1	C	7 28 39.822	+.068	C	+23 48 00.67	-0.15	1.258153
58 09 13.66	6460.16852	1	C	10 22 58.389	+.136	C	+11 17 34.93	-0.87	1.053670
58 09 14.66	6461.16980	1	C	10 28 45.488	+.134	C	+10 54 04.44	-0.46	1.080620
58 09 18.67	6465.17630	8	C	10 53 54.597	+.122	C	+ 8 51 27.70	-0.39	1.180149
58 09 22.68	6469.18393	2	C	11 20 42.132	+.111	C	+ 6 14 20.41	-2.18	1.262253

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

MERCURY

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
58 09 23.68	6470.18589	5	C	11 27 28.232	+.180	C	+ 5 31 26.71	-1.09	1.279773
58 09 25.68	6472.18978	8	C	11 40 58.437	+.068	C	+ 4 02 42.87	-0.32	1.311241
58 09 28.69	6475.19547	1	C	12 01 01.228	+.109	C	+ 1 44 50.67	-0.51	1.349925
58 09 29.69	6476.19731	8	C	12 07 37.358	+.070	C	+ 0 58 11.58	-0.59	1.360693
58 10 10.71	6487.21561	2	C	13 17 24.486	+.136	C	- 7 27 11.26	-0.68	1.421518
58 10 12.71	6489.21862	1	C	13 29 38.106	+.086	C	- 8 54 00.50	-1.07	1.423157
58 10 16.72	6493.22445	2	C	13 53 49.962	+.126	C	-11 40 26.88	-1.77	1.419277
58 10 17.72	6494.22588	3	C	13 59 50.408	+.008	C	-12 20 24.37	-1.64	1.416898
58 10 20.73	6497.23014	8	C	14 17 48.406	-.019	C	-14 16 00.20	-2.88	1.406545
58 10 24.73	6501.23575	2	C	14 41 41.322	+.089	C	-16 39 14.09	+0.53	1.385470
58 10 27.73	6504.23996	2		14 59		C	-18 17 55.63	-2.30	1.364310
58 10 29.74	6506.24276	5	C	15 11 31.470	+.108	C	-19 19 09.78	-1.23	1.347652
58 10 30.74	6507.24417	8	C	15 17 29.635	+.120	C	-19 48 21.20	-0.14	1.338549
58 10 31.74	6508.24557	3	C	15 23 27.763	+.109	C	-20 16 33.99	+0.97	1.328928
58 11 03.74	6511.24977	2	C	15 41 21.232	+.109	C	-21 35 10.90	+0.18	1.296889
58 11 07.75	6515.25527	2	C	16 05 04.530	+.195	C	-23 04 48.52	+1.27	1.246539
58 11 08.75	6516.25662	1	C	16 10 57.193	+.123	C	-23 24 22.63	-1.18	1.232541
58 11 19.76	6527.26820	2	C	17 11 03.296	+.085	C	-25 33 19.03	-4.46	1.039747
58 11 20.76	6528.26868	8	C	17 15 40.829	+.098	C	-25 36 23.94	+2.30	1.018795
58 11 21.76	6529.26898	2	C	17 20 03.545	+.164	C	-25 38 06.29	+0.03	0.997358
59 01 18.67	6587.17299	1		18 50		C	-23 39 58.41	+1.08	1.316044
59 02 05.70	6605.20823	2	C	20 51 58.968	+.128	C	-19 42 37.92	+0.07	1.406248
59 02 06.71	6606.21030	1	C	20 58 54.908	+.190	C	-19 15 55.87	+1.17	1.406353
59 02 07.71	6607.21238	1	C	21 05 51.313	+.208	C	-18 47 47.03	+1.14	1.405876
59 02 19.73	6619.23749	2	C	22 29 25.238	+.066	C	-11 17 02.38	+1.17	1.346003
59 02 21.74	6621.24162	1	C	22 43 16.415	+.142	C	- 9 42 54.46	-0.14	1.324028
59 02 25.74	6625.24962	3	C	23 10 35.450	+.060	C	- 6 21 54.91	+0.76	1.267002
59 02 28.75	6628.25515	1		23 30		C	- 3 43 49.55	-0.01	1.211880
59 03 04.76	6632.26132	2	C	23 55 05.110	+.029	C	- 0 12 42.86	+1.71	1.122054
59 03 19.75	6647.25341	2	C	0 42 48.363	+.034	C	+ 8 09 05.34	-0.07	0.731822
59 04 15.65	6674.15434	1	C	0 06 11.646	+.068	C	- 0 34 59.39	+0.78	0.693315
59 04 24.64	6683.14530	2	C	0 28 37.536	+.023	C	+ 0 21 38.79	+2.66	0.817387
59 05 06.64	6695.14862	3	C	1 20 44.361	+.127	C	+ 5 22 34.10	-1.84	1.003974
59 05 12.65	6701.15545	1	C	1 54 15.034	+.098	C	+ 8 58 35.25	-0.95	1.099265
59 05 25.68	6714.18336	8	C	3 25 48.601	+.182	C	+17 53 22.64	+0.91	1.277795
59 05 30.69	6719.19957	6	C	4 08 55.637	+.042	C	+21 03 39.07	+1.18	1.314823
59 07 03.79	6753.29241	6	C	8 37 01.640	-.019	C	+19 15 07.36	+0.15	0.919555
59 07 07.79	6757.29341	1	C	8 54 14.049	-.094	C	+17 24 42.96	+0.09	0.855395
59 07 08.79	6758.29326	6	C	8 57 58.023	+.045	C	+16 57 16.12	-0.59	0.839820
59 08 17.67	6798.17061	1		8 38		C	+16 00 31.43	-0.62	0.761917
59 08 20.66	6801.16641	5	C	8 44 20.051	+.002	C	+16 32 40.42	-0.64	0.832076
59 08 26.66	6807.16694	1	C	9 08 45.689	+.129	C	+16 30 48.45	-1.01	0.991438
59 09 03.68	6815.18085	8	C	10 00 23.080	+.154	C	+13 44 38.43	-0.49	1.194703
59 09 04.68	6816.18312	1	C	10 07 36.094	+.187	C	+13 11 39.18	-1.22	1.216066
59 09 05.68	6817.18543	1	C	10 14 52.569	+.164	C	+12 36 28.86	-0.89	1.236217
59 09 11.69	6823.19925	1	C	10 58 29.453	+.150	C	+ 8 30 14.25	-0.64	1.330634
59 09 12.70	6824.20145	1	C	11 05 36.517	+.150	C	+ 7 45 05.59	-0.93	1.342078
59 09 13.70	6825.20360	1	C	11 12 39.532	+.203	C	+ 6 59 13.61	-1.21	1.352385
59 09 22.72	6834.22064	1	C	12 12 44.771	+.143	C	- 0 06 29.60	-1.17	1.401600
59 10 04.73	6846.23810	1	C	13 25 16.109	-.030	C	- 9 06 04.48	-0.90	1.378647
59 10 05.73	6847.23938	2	C	13 31 03.704	+.124	C	- 9 47 39.70	+0.25	1.373259
59 10 12.74	6854.24788	6	C	14 10 55.716	+.092	C	-14 20 00.16	+0.61	1.322322
59 10 17.75	6859.25354	1	C	14 38 48.841	+.103	C	-17 11 33.41	-0.94	1.272026
59 10 18.75	6860.25463	1	C	14 44 19.851	+.117	C	-17 43 15.83	-0.57	1.260563
59 10 19.75	6861.25570	8	C	14 49 49.388	+.065	C	-18 14 04.91	-2.16	1.248625

MERCURY

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
59 10 20.75	6862.25676	6	C	14 55 17.383	+.050	C	−18 43 53.88	−0.53	1.236208
59 10 28.76	6870.26417	5	C	15 37 31.937	+.184	C	−22 04 46.70	−0.89	1.119173
59 11 03.76	6876.26720	6	C	16 05 33.752	+.105	C	−23 43 06.50	+0.50	1.010675
59 11 09.76	6882.26494	2		16 25		C	−24 23 20.90	−2.11	0.888020
59 12 04.65	6907.15669	2	2	15 28 12.800	+.007	S	−16 07 44.29	+0.69	0.830163
59 12 09.64	6912.14977	6	C	15 37 56.147	+.149	C	−16 51 16.01	−0.30	0.950277
60 01 08.68	6942.18643	1	C	18 29 08.720	+.202	C	−24 17 18.84	+0.12	1.394330
60 01 09.68	6943.18842	1	C	18 35 58.307	+.294	C	−24 17 50.19	+0.37	1.399851
60 01 16.70	6950.20290	1	C	19 24 27.845	+.093	C	−23 43 05.56	+1.27	1.423716
60 02 04.74	6969.24378	3	C	21 38 24.199	+.106	C	−16 03 29.33	+1.07	1.340912
60 02 06.74	6971.24790	1		21 52		C	−14 43 49.40	+1.01	1.315945
60 02 16.76	6981.26523	2	1	22 56 41.633	+.177	S	− 7 04 05.21	+0.96	1.127309
60 02 19.76	6984.26813	6	C	23 12 42.604	+.095	C	− 4 42 17.00	+1.38	1.050419
60 02 20.76	6985.26869	1	C	23 17 27.189	+.104	C	− 3 57 07.28	−0.07	1.023296
60 02 27.76	6992.26436	1	C	23 38 47.809	−.088	C	+ 0 12 02.45	+0.28	0.829548
60 03 01.75	6995.25711	2	C	23 40 09.754	+.028	C	+ 1 03 21.78	−1.65	0.755566
60 03 28.65	7022.15386	8	C	22 57 31.423	+.071		− 6 55		0.735441
60 04 06.64	7031.14687	2	C	23 22 54.941	+.108	C	− 5 57 19.30	+1.82	0.862485
60 04 07.64	7032.14676	8	C	23 26 42.190	+.114	C	− 5 41 17.36	+1.00	0.877126
60 04 20.65	7045.15349	1	C	0 27 40.441	+.242	C	+ 0 03 57.39	+0.73	1.067113
60 04 21.65	7046.15454	2	C	0 33 07.719	+.133	C	+ 0 39 31.76	+1.24	1.081381
60 04 22.65	7047.15566	6	C	0 38 41.196	+.102	C	+ 1 16 10.58	+0.67	1.095549
60 04 23.65	7048.15685	1	C	0 44 20.950	+.178	C	+ 1 53 53.43	+0.73	1.109602
60 04 29.66	7054.16556	1	C	1 20 34.399	+.178	C	+ 6 00 09.49	+0.87	1.190470
60 05 02.67	7057.17100	9	C	1 40 15.724	+.132	C	+ 8 14 06.20	+0.76	1.227492
60 05 04.67	7059.17508	6	C	1 54 02.517	+.140	C	+ 9 46 22.60	+0.77	1.250220
60 05 05.67	7060.17727	2	C	2 01 08.463	+.167	C	+10 33 10.23	−0.14	1.260845
60 05 06.67	7061.17955	9	C	2 08 23.101	+.199	C	+11 20 19.73	+1.10	1.270895
60 05 10.68	7065.18975	3	C	2 38 52.271	+.151	C	+14 30 00.87	+1.97	1.303950
60 05 20.72	7075.22215	2	C	4 05 05.350	+.121	C	+21 36 43.10	0.00	1.309709
60 05 31.75	7086.25999	9	C	5 43 05.383	+.111	C	+25 25 07.99	−0.55	1.168414
60 06 01.76	7087.26293	8	C	5 51 17.133	+.101	C	+25 30 14.49	−0.45	1.150654
60 06 05.77	7091.27338	6	C	6 22 08.006	+.054	C	+25 28 05.70	−0.66	1.076442
60 06 10.78	7096.28306	6	C	6 55 49.960	+.113	C	+24 43 16.55	−0.04	0.981508
60 08 19.68	7166.18658	4	C	9 12 29.735	+.056	C	+17 30 00.25	+0.16	1.227754
60 08 21.69	7168.19209	1		9 28		C	+16 30 03.72	−1.44	1.264273
60 08 23.69	7170.19761	6		9 44		C	+15 21 24.62	−1.78	1.295533
60 08 25.70	7172.20302	8	C	9 59 53.329	+.180	C	+14 05 23.95	−1.28	1.321494
60 08 26.70	7173.20565	4	C	10 07 37.979	+.168	C	+13 25 04.40	−0.92	1.332540
60 09 03.72	7181.22427	1	C	11 06 04.066	+.162	C	+ 7 27 40.46	−1.34	1.380447
60 09 04.72	7182.22627	1	C	11 12 53.933	+.212	C	+ 6 40 38.02	−1.18	1.382161
60 09 14.74	7192.24280	9	C	12 16 11.206	+.102		− 1 08		1.362196
60 10 10.76	7218.26694	9	C	14 33 32.901	+.039	C	−17 41 34.61	+0.42	1.093039
60 11 07.70	7246.20259	9	C	14 51 01.387	−.141	C	−16 33 17.40	+0.89	0.675223
60 11 18.65	7257.15583	2	C	14 26 52.242	+.069	C	−12 02 44.98	−2.25	0.858571
60 11 19.65	7258.15422	1	C	14 28 29.309	+.110	C	−12 07 16.99	−0.46	0.884114
60 11 20.65	7259.15298	1	C	14 30 38.725	+.060	C	−12 15 58.58	−0.56	0.909898
60 11 21.65	7260.15209	8	C	14 33 17.477	+.004	C	−12 28 18.81	−0.22	0.935706
60 12 02.65	7271.15634	9	C	15 22 48.574	+.043	C	−16 50 00.70	+0.25	1.186363
60 12 05.66	7274.16002	9	C	15 39 56.740	+.195	C	−18 12 15.02	+0.06	1.239059
60 12 09.66	7278.16576	2	C	16 04 00.338	+.104		−19 55		1.298562
60 12 10.66	7279.16732	1	C	16 10 11.799	+.189	C	−20 20 00.42	+0.20	1.311606
61 01 29.76	7329.26717	1	C	21 51 30.486	+.060	C	−14 04 47.09	+0.14	1.153577
61 01 30.76	7330.26849	9	C	21 57 21.486	+.125	C	−13 23 28.56	+1.27	1.130323
61 02 05.77	7336.27231	1	C	22 26 31.823	+.033	C	− 9 19 44.76	+0.89	0.973420

MERCURY

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
61 03 11.65	7370.15414	1	C	21 49 56.587	+.169		-12 30		0.777252
61 03 20.64	7379.14892	6	C	22 17 53.283	+.206	C	-11 45 00.48	+0.03	0.909748
61 03 25.65	7384.15031	1	C	22 39 36.437	+.162	C	-10 20 56.15	-0.24	0.982101
61 03 26.65	7385.15084	1	C	22 44 19.073	+.209	C	- 9 59 38.31	+0.74	0.996263
61 03 29.65	7388.15286	8	C	22 59 03.374	+.162	C	- 8 47 25.35	-0.23	1.038014
61 04 07.66	7397.16211	2	C	23 47 53.680	+.087	C	- 4 01 07.60	+1.18	1.155414
61 04 17.67	7407.17764	8	C	0 49 44.636	+.162	C	+ 3 02 53.19	-0.13	1.265189
61 04 20.68	7410.18354	3	C	1 10 05.778	+.133	C	+ 5 27 44.93	+0.15	1.290861
61 05 09.73	7429.23681	6	C	3 41 55.088	+.088	C	+20 50 01.48	+0.81	1.259442
61 05 15.75	7435.25535	1	C	4 32 21.377	+.027	C	+23 51 52.23	+0.60	1.157876
61 05 17.76	7437.26085	4	C	4 48 10.693	-.085	C	+24 31 55.38	-0.63	1.118045
61 05 24.77	7444.27581	4	C	5 37 22.932	-.004	C	+25 37 15.48	-0.64	0.971214
61 05 28.78	7448.28076	1	C	6 00 17.546	-.021	C	+25 30 52.15	+0.22	0.889061
61 06 04.78	7455.28203	1	C	6 29 43.307	+.028	C	+24 26 30.75	+0.23	0.758665
61 07 10.66	7491.16752	8	C	6 06 18.984	-.123	C	+19 13 25.95	-2.26	0.686820
61 07 24.66	7505.16161	8	C	6 52 58.755	+.124	C	+21 39 56.11	-0.62	0.989046
61 07 25.66	7506.16310	2	C	6 59 04.563	+.162		+21 45		1.013828
61 08 10.70	7522.20734	2	C	9 06 01.753	+.156		+18 18		1.322669
61 08 18.72	7530.22965	2	C	10 09 47.007	+.243	C	+13 10 06.34	+1.41	1.363587
61 08 23.74	7535.24065	2		10 45		C	+ 9 26 52.84	-0.67	1.357855
61 08 29.75	7541.25108	6	C	11 24 06.369	+.093	C	+ 4 50 32.02	-1.45	1.329742
61 09 21.77	7564.27154	6	C	13 24 19.444	+.140	C	-11 03 17.99	-0.54	1.088318
61 09 22.77	7565.27181	9	C	13 28 38.844	+.034	C	-11 36 44.41	-0.49	1.073849
61 10 05.76	7578.26656	6	C	14 12 19.333	-.054	C	-16 54 06.12	-1.68	0.861505
61 11 17.66	7621.16152	9	C	14 30 11.120	+.155	C	-12 57 10.28	+0.12	1.220918
61 11 21.66	7625.16688	2	C	14 53 42.117	+.166	C	-15 11 34.47	-0.40	1.288296
61 11 28.67	7632.17777	2	C	15 37 00.797	+.160	C	-18 49 56.36	-1.39	1.374853
61 11 30.68	7634.18114	3	C	15 49 45.928	+.024	C	-19 45 42.72	+0.43	1.392987
61 12 27.73	7661.23522	6	C	18 54 18.768	+.166	C	-24 55 08.22	-0.39	1.399640
61 12 31.74	7665.24397	9	C	19 22 43.083	+.066	C	-24 14 59.88	+1.70	1.362513
62 01 04.75	7669.25252	1	C	19 50 49.776	+.185	C	-23 09 53.74	+0.46	1.313402
62 01 07.75	7672.25861	1	C	20 11 26.779	+.144	C	-22 04 51.15	-0.16	1.267866
62 01 12.76	7677.26752	2	C	20 44 01.416	+.132	C	-19 48 11.31	+0.44	1.173794
62 01 14.77	7679.27037	1	C	20 56 01.728	+.110	C	-18 45 24.22	+1.04	1.129591
62 01 16.77	7681.27261	1	C	21 07 09.237	+.142	C	-17 39 35.93	+0.66	1.081790
62 01 17.77	7682.27345	2		21 12		C	-17 06 04.25	-0.40	1.056654
62 01 23.77	7688.27267	6	C	21 34 50.150	+.071	C	-13 54 08.32	-0.03	0.894969
62 03 01.65	7725.15027	6	C	21 03 57.861	+.069	C	-16 49 52.06	-0.71	0.925266
62 03 08.65	7732.15286	6	C	21 35 18.731	+.155	C	-15 32 44.83	-1.05	1.028787
62 03 27.67	7751.17509	6		23 22		C	- 6 35 46.88	-1.20	1.253219
62 03 29.67	7753.17830	1	C	23 34 49.881	+.164	C	- 5 13 42.90	+0.02	1.271035
62 04 10.70	7765.20156	6	C	0 55 43.863	+.138	C	+ 4 24 35.24	+1.04	1.337917
62 04 21.73	7776.23012	9	C	2 20 20.125	+.143		+14 20		1.287611
62 04 24.73	7779.23864	1	C	2 44 28.013	+.103		+16 49		1.246186
62 04 25.74	7780.24145	8	C	2 52 28.218	+.080		+17 35		1.229776
62 04 26.74	7781.24423	6	C	3 00 25.405	+.252	C	+18 20 03.97	+1.48	1.212185
62 04 27.74	7782.24695	9	C	3 08 17.765	+.065	C	+19 02 25.08	-0.33	1.193511
62 05 03.76	7788.26144	1	C	3 52 52.219	+.028	C	+22 26 56.91	+0.04	1.065192
62 05 04.76	7789.26343	2	C	3 59 41.276	+.149	C	+22 52 18.94	+0.83	1.042224
62 05 09.77	7794.27096	6	C	4 30 16.537	+.057	C	+24 22 36.80	+0.75	0.927056
62 07 11.66	7857.16273	6	C	6 02 23.283	+.120	C	+22 20 23.91	-0.30	1.065838
62 07 13.66	7859.16732	4	C	6 16 53.789	+.097	C	+22 42 57.63	-0.67	1.110941
62 07 19.68	7865.18511	2	C	7 06 14.494	+.162	C	+23 05 25.63	-0.18	1.232074
62 08 01.72	7878.22952	6		9 01		C	+18 46 31.41	+2.01	1.347630
62 08 02.73	7879.23250	9	C	9 09 51.453	+.161	C	+18 11 38.89	-1.43	1.347712

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

MERCURY

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
62 08 08.74	7885.24803	9		9 55		C	+14 17 45.45	+0.15	1.329623
62 08 12.75	7889.25626	1	C	10 23 35.776	+.085	C	+11 26 55.33	-1.02	1.304099
62 08 18.76	7895.26580	1	C	11 01 01.389	-.033	C	+ 7 03 00.40	-0.40	1.252218
62 08 22.77	7899.27054	7	C	11 23 38.828	+.102	C	+ 4 07 49.11	-1.08	1.210826
62 08 26.77	7903.27415	1	C	11 44 37.526	+.050	C	+ 1 16 51.87	-1.61	1.164986
62 08 29.77	7906.27615	1	C	11 59 20.429	-.022	C	- 0 46 57.68	-1.92	1.127953
62 08 31.77	7908.27715	6		12 08		C	- 2 06 46.99	-0.72	1.102064

VENUS

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
56 01 26.82	5499.32005	0	1	22 52 56.563	+.020	S	- 8 34 55.28	-0.73	1.246938
56 02 01.82	5505.32217	0	1	23 19 39.746	-.093	S	- 5 33 07.42	+1.15	1.211584
56 02 08.82	5512.32424	1	1	23 50 14.769	-.040	S	- 1 55 00.83	+0.23	1.168904
56 02 10.82	5514.32477	1	1	23 58 53.765	+.072	S	- 0 52 02.31	+0.84	1.156417
56 02 16.82	5520.32623	8	1	0 24 40.150	+.050	S	+ 2 17 05.80	+0.14	1.118158
56 02 20.82	5524.32714	1	1	0 41 45.045	-.022	S	+ 4 22 25.40	-0.47	1.091984
56 02 23.82	5527.32780	0	1	0 54 31.923	-.052	S	+ 5 55 28.65	-0.93	1.072013
56 02 29.82	5533.32911	8	1	1 20 04.371	-.044	S	+ 8 57 50.19	-0.70	1.031244
56 03 21.83	5554.33421	0	1	2 50 13.967	-.169	S	+18 25 24.15	-1.28	0.880322
56 07 26.60	5681.10535	8	2	5 40 28.621	+.013	N	+18 02 54.72	+1.22	0.433879
56 08 09.59	5695.09081	1	2	6 14 40.966	+.147	N	+18 47 02.45	+0.01	0.535074
56 08 10.59	5696.09019	3	2	6 17 44.242	+.017	N	+18 49 53.43	-2.59	0.542599
56 08 16.58	5702.08743	8	2	6 37 24.579	+.175	N	+19 03 21.77	+1.06	0.588241
56 08 17.58	5703.08711	3	2	6 40 53.281	+.062	N	+19 04 44.70	-0.32	0.595913
56 08 18.58	5704.08683	1	2	6 44 25.308	+.141		+19 05		0.603600
56 08 22.58	5708.08603	3	2	6 59 02.354	+.150	S	+19 07 14.09	-0.50	0.634457
56 08 23.58	5709.08591	5	2	7 02 48.272	+.047	C	+19 06 43.60	-0.49	0.642191
56 09 13.58	5730.08836	1	2	8 29 07.966	+.084	S	+17 18 42.46	-0.64	0.803945
56 09 14.58	5731.08863	5	2	8 33 28.127	+.030	S	+17 08 28.61	-0.71	0.811550
56 09 18.58	5735.08980	1	2	8 50 55.733	+.135	S	+16 22 46.56	+0.02	0.841838
56 10 01.59	5748.09411	8	2	9 48 24.041	+.196	S	+13 02 48.36	-1.22	0.938384
56 10 03.59	5750.09480	2	2	9 57 16.816	+.037	S	+12 25 31.74	-0.23	0.952919
56 10 08.59	5755.09652	1	2	10 19 28.999	+.164	S	+10 45 27.83	-0.31	0.988838
56 10 09.59	5756.09686	3	2	10 23 55.222	+.129	S	+10 24 20.53	-0.44	0.995949
56 10 10.59	5757.09720	8	2	10 28 21.459	+.177	S	+10 02 52.18	-0.65	1.003036
56 10 11.59	5758.09755	2	2	10 32 47.508	+.109	S	+ 9 41 03.73	-0.43	1.010099
56 10 12.59	5759.09789	2	2	10 37 13.535	+.094	S	+ 9 18 55.86	+0.23	1.017138
56 10 13.59	5760.09823	1	2	10 41 39.582	+.179	S	+ 8 56 27.72	+0.03	1.024152
56 10 16.59	5763.09924	1	2	10 54 57.049	+.156	S	+ 7 47 12.85	-0.32	1.045044
56 11 06.60	5784.10645	1	2	12 28 09.272	+.157	S	- 1 13 40.81	-1.30	1.184202
56 11 15.60	5793.10993	3	2	13 08 39.725	+.251	S	- 5 18 44.19	-1.29	1.239616
56 11 18.61	5796.11120	1	2	13 22 19.499	+.117	S	- 6 39 48.43	-0.08	1.257511
56 11 20.61	5798.11209	1	2	13 31 29.569	+.098	S	- 7 33 24.64	+0.15	1.269278
56 11 28.61	5806.11602	3	2	14 08 42.938	+.202	S	-11 02 00.02	-2.08	1.314970
56 12 10.62	5818.12330	8	2	15 06 32.046	+.152		-15 45		1.379175
56 12 19.63	5827.13000	2	2	15 51 41.754	+.041		-18 42		1.423967
57 01 14.65	5853.15466	8	2	18 09 48.273	+.161	C	-23 01 17.13	-0.47	1.536755
57 01 19.65	5858.15984	1		18 37		N	-22 59 19.52	-0.96	1.555627
57 02 02.67	5872.17388	1		19 52		N	-21 21 10.50	-0.83	1.603567
57 02 10.68	5880.18111	1	2	20 34 26.868	+.215	N	-19 27 43.73	-0.65	1.627644
57 02 12.68	5882.18279	1	2	20 44 45.885	+.163	N	-18 53 28.59	+0.45	1.633296
57 02 17.68	5887.18677	1	2	21 10 13.473	+.165	N	-17 18 31.42	-0.28	1.646789
57 02 18.68	5888.18753	1	2	21 15 15.503	+.150	N	-16 57 59.45	+0.85	1.649377
57 02 20.68	5890.18900	8	2	21 25 16.101	+.148	N	-16 15 32.25	+0.67	1.654440
57 02 21.68	5891.18971	2		21 30		N	-15 53 38.36	-0.59	1.656913

VENUS

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
57 02 24.69	5894.19178	1	2	21 45 03.623	+.256	N	-14 45 16.09	-0.43	1.664099
57 03 03.69	5901.19616	1	2	22 18 58.996	+.191	N	-11 52 04.97	+0.48	1.679458
57 03 05.69	5903.19731	5	C	22 28 31.153	+.067	C	-10 59 34.82	-1.36	1.683478
57 03 13.70	5911.20148	2		23 06		N	- 7 18 40.60	-0.08	1.697913
57 03 14.70	5912.20196	2	2	23 10 43.154	+.059	N	- 6 50 03.96	-0.29	1.699533
57 03 16.70	5914.20290	1	2	23 19 57.693	-.006	N	- 5 52 18.32	-0.67	1.702651
57 03 23.70	5921.20601	1	2	23 52 03.309	+.095	N	- 2 25 44.24	+0.01	1.712233
57 03 29.70	5927.20855	2	2	0 19 22.186	+.011	N	+ 0 34 20.69	-1.27	1.718706
57 03 31.70	5929.20939	1	2	0 28 27.835	+.074	N	+ 1 34 30.33	-2.05	1.720489
57 04 30.72	5959.22420	2	1	2 48 08.307	+.115	S	+15 32 05.39	+0.23	1.723489
57 05 01.72	5960.22484	3	1	2 53 00.004	+.096		+15 55		1.722773
57 05 02.72	5961.22549	1	1	2 57 52.821	+.131	S	+16 19 10.11	+0.75	1.722002
57 05 03.72	5962.22615	2	1	3 02 46.737	+.177	S	+16 42 03.97	-0.59	1.721174
57 05 04.72	5963.22683	1	C	3 07 41.559	+.032	C	+17 04 35.38	+1.26	1.720290
57 05 06.72	5965.22821	2	1	3 17 34.873	+.122	S	+17 48 13.33	-0.18	1.718353
57 05 07.72	5966.22892	1	C	3 22 33.109	+.077	C	+18 09 21.90	+0.09	1.717298
57 05 08.72	5967.22965	3	1	3 27 32.403	-.013	S	+18 30 01.48	-0.08	1.716188
57 05 13.73	5972.23347	2	1	3 52 46.198	+.124	S	+20 05 47.25	-0.58	1.709798
57 05 24.74	5983.24295	2	1	4 49 49.335	+.138	S	+22 46 47.24	-1.07	1.690769
57 05 25.74	5984.24387	1	1	4 55 05.992	+.021	S	+22 57 41.63	-1.23	1.688693
57 05 28.74	5987.24670	1	1	5 11 00.729	-.066	S	+23 26 27.12	-0.54	1.682110
57 06 10.75	6000.25950	8	1	6 20 44.816	-.014	S	+24 18 44.04	-0.76	1.647440
57 06 13.76	6003.26247	2	1	6 36 52.225	+.052	S	+24 13 39.30	-0.23	1.638065
57 06 20.76	6010.26926	2	1	7 14 16.093	+.140	N	+23 36 46.83	-3.20	1.614255
57 07 01.77	6021.27906	8	1	8 11 47.555	-.011	N	+21 31 30.73	-1.50	1.571416
57 07 02.77	6022.27988	5	1	8 16 55.147	+.015	C	+21 16 19.03	-0.73	1.567197
57 07 10.78	6030.28593	8	1	8 57 11.175	-.020	N	+18 54 02.28	-0.01	1.531612
57 07 16.78	6036.28984	1	1	9 26 29.045	-.036	N	+16 45 32.94	+1.09	1.502913
57 08 01.79	6052.29778	2	1	10 41 02.314	+.036	N	+ 9 51 59.67	-0.27	1.418630
57 08 02.79	6053.29817	3		10 45		N	+ 9 23 30.11	-1.19	1.413006
57 08 11.80	6062.30127	1	1	11 25 29.934	-.019	N	+ 4 57 58.02	-1.61	1.360732
57 08 13.80	6064.30187	2	1	11 34 15.218	+.013	N	+ 3 57 13.85	-0.51	1.348739
57 09 05.80	6087.30805	2	1	13 13 51.455	+.065	N	- 7 50 18.23	-1.54	1.202184
57 09 25.81	6107.31503	1	1	14 42 47.244	+.050	N	-17 05 05.18	+0.31	1.064301
57 09 27.81	6109.31593	5	1	14 51 57.871	-.007	N	-17 53 41.23	+0.10	1.050086
57 10 09.82	6121.32214	5	1	15 48 15.110	+.031	N	-22 07 57.06	-0.13	0.963407
57 10 14.82	6126.32512	1	1	16 12 15.954	+.017	N	-23 32 05.60	+1.53	0.926715
57 10 15.82	6127.32574	2	1	16 17 06.191	+.130	N	-23 47 14.34	+0.12	0.919344
57 10 21.82	6133.32957	1	1	16 46 17.176	+.099	N	-25 05 19.07	-0.42	0.874893
57 11 06.83	6149.33975	5	1	18 04 03.741	+.041	N	-26 40 17.17	-2.18	0.754711
57 11 07.84	6150.34032	3	1	18 08 49.898	+.049	N	-26 40 34.12	+0.05	0.747149
57 11 21.84	6164.34638	2	1	19 12 47.147	+.092	S	-25 38 54.17	+1.35	0.641337
57 12 02.84	6175.34722	2	1	19 57 21.508	+.078	S	-23 34 43.56	+0.49	0.558976
58 01 09.79	6213.29469	2	1	21 11 19.845	-.260	S	-13 16 38.59	-0.93	0.313789
58 01 23.74	6227.24079	2	1	20 48 41.417	-.244	S	-11 21 09.30	-0.32	0.271913
58 01 28.71	6232.21835	2		20 36		S	-11 14 29.30	+0.06	0.269382
58 01 29.71	6233.21384	2	C	20 33 26.569	-.048	S	-11 15 15.97	-2.41	0.269749
58 02 08.67	6243.17171	1	2	20 12 02.030	+.112	S	-11 50 52.11	-1.45	0.288936
58 02 12.65	6247.15746	3	2	20 07 13.753	+.023	S	-12 13 40.61	-1.03	0.303693
58 02 13.65	6248.15419	2	2	20 06 26.856	+.053	S	-12 19 37.37	-0.45	0.307916
58 03 04.61	6267.11269	2	2	20 21 26.206	-.028	N	-13 45 19.83	+0.94	0.416923
58 03 07.60	6270.10909	1	2	20 28 03.748	+.061	N	-13 48 29.07	+0.30	0.437591
58 04 02.59	6296.09573	8	2	21 51 16.351	+.121	N	-11 16 15.11	+0.19	0.633189
58 04 03.59	6297.09560	1	2	21 55 01.532	+.079	N	-11 03 50.30	+1.08	0.641037
58 04 04.59	6298.09548	3	2	21 58 48.132	+.060		-10 50		0.648896

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

VENUS

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
58 04 09.59	6303.09512	1	2	22 17 59.763	+.179	N	- 9 39 59.34	+2.12	0.688316
58 04 14.59	6308.09504	5	2	22 37 35.690	+.140	N	- 8 18 36.36	0.00	0.727834
58 04 15.59	6309.09505	5	2	22 41 33.145	+.114	N	- 8 01 09.12	+0.53	0.735738
58 04 17.59	6311.09510	2	2	22 49 30.151	+.221	N	- 7 25 09.86	+0.76	0.751539
58 04 18.59	6312.09513	8	2	22 53 29.352	+.092	N	- 7 06 38.20	+1.33	0.759436
58 04 30.59	6324.09593	3	2	23 41 57.320	+.197	N	- 3 00 46.12	+0.19	0.853787
58 05 12.59	6336.09739	8	2	0 31 22.972	+.068	N	+ 1 36 52.21	+0.10	0.946787
58 05 13.59	6337.09755	8	2	0 35 33.062	+.181	N	+ 2 00 52.30	+0.15	0.954438
58 05 14.59	6338.09771	1	2	0 39 43.469	+.133	N	+ 2 24 58.28	+1.25	0.962071
58 05 18.59	6342.09841	1	2	0 56 30.396	+.150	N	+ 4 01 52.91	+1.18	0.992410
58 05 21.59	6345.09900	1	2	1 09 11.302	+.123	N	+ 5 14 51.27	+0.46	1.014950
58 05 22.59	6346.09921	2	2	1 13 26.108	+.095	N	+ 5 39 11.12	+0.79	1.022421
58 05 28.60	6352.10064	3	2	1 39 08.914	+.122	N	+ 8 04 17.28	-1.14	1.066788
58 05 29.60	6353.10090	8	2	1 43 28.551	+.098		+ 8 28		1.074104
58 06 04.60	6359.10271	2	2	2 09 44.147	+.206	N	+10 49 30.26	+0.17	1.117496
58 06 06.60	6361.10339	5	2	2 18 36.481	+.134	N	+11 35 22.19	-0.32	1.131752
58 06 11.60	6366.10530	8	2	2 41 04.778	+.104		+13 26		1.166881
58 06 16.60	6371.10752	3	2	3 03 59.544	+.229	N	+15 11 27.34	+0.27	1.201225
58 06 17.60	6372.10800	1	2	3 08 37.635	+.103	N	+15 31 33.43	-0.13	1.207995
58 06 26.61	6381.11291	8	2	3 51 12.253	+.126	N	+18 16 45.28	+0.25	1.267380
58 06 27.61	6382.11352	2	2	3 56 01.706	+.042	N	+18 33 09.05	+0.40	1.273805
58 06 28.61	6383.11415	1	2	4 00 52.461	+.117	N	+18 49 06.89	+0.57	1.280194
58 06 29.61	6384.11478	1	2	4 05 44.251	+.092	N	+19 04 37.20	-0.22	1.286548
58 06 30.61	6385.11543	8	2	4 10 37.233	+.120	N	+19 19 41.34	+0.12	1.292865
58 07 01.61	6386.11610	1	2	4 15 31.337	+.148	N	+19 34 17.23	+0.09	1.299146
58 07 02.61	6387.11678	2	2	4 20 26.536	+.166	N	+19 48 24.05	-0.58	1.305390
58 09 13.67	6460.17318	1	2	10 29 41.911	+.087	S	+10 47 47.46	-0.55	1.638244
58 09 14.67	6461.17372	1	2	10 34 24.702	+.164	S	+10 21 30.25	-1.24	1.640953
58 09 22.67	6469.17771	2	2	11 11 42.881	+.154	S	+ 6 41 45.16	-2.25	1.660747
58 09 23.67	6470.17818	5	2	11 16 20.166	+.174	S	+ 6 13 17.81	-0.77	1.662992
58 09 25.67	6472.17910	8	2	11 25 33.300	+.086	S	+ 5 15 47.01	-1.35	1.667334
58 09 28.68	6475.18046	1	2	11 39 20.515	+.158	S	+ 3 48 21.43	-0.53	1.673476
58 09 29.68	6476.18090	8	2	11 43 55.740	+.232	S	+ 3 18 56.60	-0.44	1.675425
58 10 02.68	6479.18223	2	2	11 57 40.015	+.183	S	+ 1 50 03.71	-0.57	1.680976
58 10 05.68	6482.18354	1	2	12 11 23.431	+.130	S	+ 0 20 28.38	-1.17	1.686083
58 10 06.68	6483.18398	8	2	12 15 57.979	+.190	S	- 0 09 29.83	-1.89	1.687687
58 10 07.68	6484.18442	2	2	12 20 32.475	+.134	S	- 0 39 27.01	+0.15	1.689241
58 10 09.68	6486.18530	8	2	12 29 41.930	+.124	S	- 1 39 28.58	-1.00	1.692200
58 10 10.68	6487.18574	2	2	12 34 16.853	+.063	S	- 2 09 27.40	0.00	1.693604
58 10 12.68	6489.18664	1	2	12 43 27.611	+.142	S	- 3 09 23.53	-1.29	1.696263
58 10 15.68	6492.18801	2	2	12 57 15.865	+.024	S	- 4 38 50.68	+0.85	1.699879
58 10 16.68	6493.18847	2		13 01		S	- 5 08 33.32	-1.29	1.700985
58 10 17.68	6494.18894	3	2	13 06 30.284	+.177	S	- 5 38 07.17	-0.49	1.702044
58 10 18.68	6495.18942	1	2	13 11 08.125	+.171	S	- 6 07 35.79	-1.10	1.703055
58 10 20.69	6497.19039	8	2	13 20 25.444	+.159	S	- 7 06 08.20	-0.68	1.704934
58 10 24.69	6501.19243	2	2	13 39 07.600	+.072	S	- 9 01 19.57	-0.18	1.708139
58 10 25.69	6502.19295	1	2	13 43 50.028	+.126	S	- 9 29 39.56	-0.43	1.708826
58 10 27.69	6504.19404	2	2	13 53 17.130	+.040	S	-10 25 38.60	+0.64	1.710067
58 10 29.69	6506.19517	5	2	14 02 47.902	+.135	S	-11 20 42.77	-1.04	1.711130
58 10 30.69	6507.19575	8	2	14 07 34.651	+.148	S	-11 47 50.60	-1.21	1.711595
58 10 31.69	6508.19634	3	C	14 12 22.361	+.154	C	-12 14 41.82	-1.58	1.712016
58 11 03.69	6511.19818	2	2	14 26 51.506	+.041	S	-13 33 23.84	+0.21	1.713015
58 11 19.71	6527.21003	2	1	15 47 03.155	+.217		-19 33		1.711635
58 11 20.71	6528.21089	8	1	15 52 14.003	+.068	N	-19 52 08.24	+0.80	1.711185
58 11 21.71	6529.21176	2	1	15 57 26.319	+.189	N	-20 10 02.76	-1.03	1.710693

VENUS

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
58 11 25.71	6533.21539	1	C	16 18 26.698	+.136	C	−21 15 42.62	+1.25	1.708323
58 11 29.71	6537.21922	1	1	16 39 44.687	+.082	N	−22 11 35.46	+1.06	1.705322
58 11 30.72	6538.22020	1	1	16 45 06.733	+.074	N	−22 23 57.35	+0.53	1.704475
58 12 09.72	6547.22951	1		17 34		C	−23 44 16.71	−0.76	1.695085
58 12 10.73	6548.23058	2	1	17 39 31.429	−.051	N	−23 49 36.59	+0.83	1.693843
58 12 12.73	6550.23274	3	C	17 50 31.450	+.089	C	−23 58 07.44	+0.83	1.691239
58 12 13.73	6551.23382	1	C	17 56 01.870	+.103	C	−24 01 16.47	+0.61	1.689877
58 12 19.74	6557.24035	2		18 29		N	−24 04 29.67	−0.06	1.680885
58 12 22.74	6560.24359	8	C	18 45 37.107	−.066	C	−23 55 58.25	+1.40	1.675876
59 01 14.76	6583.26597	2	1	20 48 36.736	+.117	S	−19 20 09.40	+1.81	1.626390
59 01 17.76	6586.26838	1	1	21 03 55.508	+.056	S	−18 19 50.20	+0.71	1.618443
59 01 22.77	6591.27210	1	C	21 29 00.289	−.036	C	−16 29 03.48	+1.72	1.604436
59 01 23.77	6592.27280	2	1	21 33 57.397	+.054	S	−16 05 30.51	+0.69	1.601521
59 01 28.77	6597.27607	5	1	21 58 23.416	+.144	S	−14 01 17.37	+1.77	1.586385
59 02 05.78	6605.28059	2	1	22 36 27.781	+.134	S	−10 23 38.12	+2.59	1.560171
59 02 06.78	6606.28110	1	1	22 41 08.524	+.060	S	− 9 55 05.61	+1.18	1.556713
59 02 07.78	6607.28160	1	1	22 45 48.413	+.095	S	− 9 26 16.83	+0.50	1.553214
59 02 12.78	6612.28395	2	1	23 08 54.499	+.094	C	− 6 58 44.56	+0.50	1.535093
59 02 19.78	6619.28688	2	1	23 40 44.657	+.145	S	− 3 25 00.19	−1.44	1.507960
59 02 25.78	6625.28918	3	1	0 07 42.632	−.017	S	− 0 17 59.54	+0.67	1.483078
59 02 28.79	6628.29028	1		0 21		S	+ 1 15 54.28	+0.32	1.470079
59 03 04.79	6632.29175	2	1	0 39 01.352	−.005	S	+ 3 20 49.36	+1.28	1.452152
59 03 18.79	6646.29718	6	1	1 42 04.101	+.122	S	+10 24 25.03	+0.64	1.383780
59 03 19.79	6647.29761	2	1	1 46 37.532	+.073	S	+10 53 16.64	+0.21	1.378556
59 03 20.79	6648.29804	3	1	1 51 11.706	+.163	S	+11 21 53.88	+0.53	1.373287
59 03 24.79	6652.29985	6	1	2 09 34.649	+.070	S	+13 13 36.69	+1.00	1.351766
59 03 25.80	6653.30033	3	1	2 14 12.229	+.086	S	+13 40 46.96	+0.69	1.346276
59 04 01.80	6660.30391	1	1	2 46 58.424	+.088	S	+16 41 16.74	+0.25	1.306634
59 04 07.80	6666.30739	6	1	3 15 38.934	+.046	S	+19 00 16.85	+0.62	1.270941
59 04 14.81	6673.31193	3	1	3 49 48.367	+.046	S	+21 20 35.54	+0.51	1.227273
59 04 15.81	6674.31262	1	1	3 54 44.665	+.067	S	+21 38 30.48	+0.21	1.220860
59 04 16.81	6675.31332	8	1	3 59 41.619	−.061	S	+21 55 51.34	−0.45	1.214402
59 04 17.81	6676.31402	1	1	4 04 39.481	−.067	S	+22 12 38.94	−0.12	1.207903
59 04 22.81	6681.31769	1	1	4 29 39.481	−.007	S	+23 27 41.51	−0.79	1.174786
59 04 29.82	6688.32308	6	1	5 05 02.338	+.049	S	+24 46 30.47	+0.94	1.126786
59 05 06.82	6695.32860	1	1	5 40 36.587	+.006	S	+25 32 49.67	−1.09	1.076982
59 05 08.83	6697.33017	6	1	5 50 45.534	−.012	S	+25 40 00.41	+2.08	1.062430
59 05 11.83	6700.33249	6	1	6 05 56.244	+.049		+25 45		1.040344
59 05 27.84	6716.34329	6	1	7 24 37.050	+.076	N	+24 34 23.02	−0.01	0.917996
59 05 29.84	6718.34435	6	1	7 34 02.584	+.165	N	+24 14 12.72	−2.09	0.902268
59 05 30.84	6719.34486	6	1	7 38 42.606	+.074	N	+24 03 18.05	−0.93	0.894374
59 06 06.84	6726.34776	6	1	8 10 29.839	−.001	N	+22 31 39.42	−1.71	0.838614
59 06 07.84	6727.34808	6	1	8 14 54.194	+.106	N	+22 16 33.77	−0.40	0.830585
59 07 03.84	6753.34609	6	1	9 54 32.650	−.053	N	+13 37 09.94	−0.28	0.620046
59 07 07.84	6757.34374	1	1	10 06 55.189	−.040	N	+12 04 16.85	+1.29	0.588127
59 08 13.77	6794.27896	5	1	10 59 14.916	−.166	N	+ 0 07 31.40	−0.36	0.334816
59 08 14.77	6795.27568	1	1	10 58 27.039	−.141	N	− 0 00 57.11	−0.37	0.330120
59 08 19.75	6800.25782	6	1	10 52 22.625	−.124	N	− 0 27 03.08	−1.43	0.309717
59 08 20.75	6801.25397	5	1	10 50 46.121	−.243		− 0 28		0.306310
59 08 21.75	6802.25005	1	1	10 49 02.718	−.189	N	− 0 29 21.71	+0.01	0.303144
59 08 25.73	6806.23365	6	1	10 41 08.324	−.203	N	− 0 19 39.10	+1.05	0.293039
59 08 26.72	6807.22941	1	1	10 38 57.655	−.150	N	− 0 14 18.60	+0.08	0.291181
59 09 03.69	6815.19485	8	2	10 20 35.800	−.155	N	+ 1 04 41.17	+0.66	0.286523
59 09 04.69	6816.19060	1	2	10 18 23.570	−.191	N	+ 1 18 04.89	+0.30	0.287230
59 09 05.68	6817.18638	1	2	10 16 15.411	−.113	N	+ 1 31 59.60	+0.09	0.288219

VENUS

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
59 09 11.66	6823.16253	1	2	10 05 27.976	−.143		+ 3 01		0.299856
59 09 12.65	6824.15885	1	2	10 04 05.807	−.094	N	+ 3 16 17.10	+1.50	0.302695
59 09 13.65	6825.15527	1	2	10 02 52.159	−.035	N	+ 3 31 08.07	+2.07	0.305773
59 09 14.65	6826.15179	1	2	10 01 47.204	−.096	N	+ 3 45 42.55	+1.11	0.309082
59 09 15.64	6827.14842	2	2	10 00 51.315	−.159	S	+ 3 59 57.38	−0.53	0.312616
59 09 18.63	6830.13894	3	2	9 59 00.003	+.117	S	+ 4 40 18.67	+0.81	0.324478
59 09 19.63	6831.13599	1	2	9 58 41.541	−.030	S	+ 4 52 45.43	+0.99	0.328824
59 09 20.63	6832.13316	1	2	9 58 32.647	−.044	S	+ 5 04 36.67	−0.15	0.333352
59 09 21.63	6833.13044	6	2	9 58 33.020	−.139	S	+ 5 15 53.42	+0.50	0.338054
59 09 22.62	6834.12782	1	2	9 58 42.844	−.047	S	+ 5 26 30.53	−0.27	0.342921
59 09 24.62	6836.12290	2	2	9 59 29.513	−.074	S	+ 5 45 45.86	−0.57	0.353121
59 10 05.60	6847.10249	2	2	10 13 23.588	+.053	S	+ 6 39 55.59	−0.68	0.417981
59 10 13.59	6855.09324	1	2	10 31 34.562	+.077	S	+ 6 24 00.17	−1.12	0.471624
59 10 20.58	6862.08787	6	2	10 51 25.657	+.082	S	+ 5 34 47.24	−0.01	0.521318
59 10 26.58	6868.08477	1		11 10		S	+ 4 29 10.37	−1.40	0.565193
59 10 29.58	6871.08363	2	2	11 20 47.300	+.070	S	+ 3 49 11.22	−0.12	0.587413
59 11 03.58	6876.08222	6	2	11 38 27.630	+.109	S	+ 2 33 04.19	+0.43	0.624715
59 11 10.58	6883.08108	2	2	12 04 24.999	+.078	S	+ 0 29 26.35	−0.51	0.677291
59 11 13.58	6886.08085	3	2	12 15 54.692	+.060	S	− 0 28 38.50	−0.48	0.699886
59 11 19.58	6892.08080	8	2	12 39 29.786	+.125	S	− 2 32 04.99	−0.88	0.745055
59 11 20.58	6893.08084	6	2	12 43 29.968	+.098	S	− 2 53 25.49	0.00	0.752569
59 11 23.58	6896.08105	8	2	12 55 37.762	+.123	S	− 3 58 33.81	−0.56	0.775067
59 11 30.58	6903.08201	2	2	13 24 36.480	+.148	S	− 6 34 53.89	−0.40	0.827211
59 12 03.58	6906.08261	1	2	13 37 18.662	+.160	S	− 7 42 50.64	−0.75	0.849369
59 12 04.58	6907.08284	2	2	13 41 34.999	+.177	S	− 8 05 31.25	−1.41	0.856728
59 12 09.58	6912.08418	6	2	14 03 13.968	+.231	S	− 9 58 19.53	+0.78	0.893310
59 12 16.58	6919.08665	2	2	14 34 23.152	+.123	S	−12 32 24.62	+0.53	0.943875
60 01 08.59	6942.09985	1	2	16 24 08.121	+.123	S	−19 30 11.59	+0.44	1.102835
60 01 20.60	6954.10959	8	2	17 25 30.542	+.224	S	−21 35 51.83	−1.68	1.180731
60 01 21.61	6955.11047	6	2	17 30 43.116	+.138	S	−21 42 34.59	+0.93	1.187052
60 01 25.61	6959.11406	6	2	17 51 40.257	+.174	S	−22 03 25.73	+1.81	1.212049
60 01 26.61	6960.11497	8	2	17 56 55.904	+.200	S	−22 07 05.92	+0.61	1.218226
60 01 27.61	6961.11589	2	2	18 02 11.853	+.101		−22 10		1.224374
60 02 03.62	6968.12239	9	2	18 39 11.287	+.171	N	−22 13 02.74	+2.14	1.266593
60 02 04.62	6969.12332	3	2	18 44 28.654	+.140	N	−22 10 51.27	+2.12	1.272510
60 02 08.62	6973.12704	8	2	19 05 36.947	+.139	N	−21 55 34.44	−0.05	1.295897
60 02 16.63	6981.13429	2	2	19 47 36.824	+.071		−20 53		1.341312
60 02 19.63	6984.13689	6	2	20 03 12.474	+.154		−20 20		1.357858
60 02 23.64	6988.14025	2	2	20 23 49.142	+.086	N	−19 27 35.50	−0.55	1.379482
60 02 26.64	6991.14266	6		20 39		N	−18 41 55.42	−0.24	1.395362
60 03 01.64	6995.14571	2	2	20 59 18.515	+.144	N	−17 33 30.16	+1.72	1.416080
60 03 02.64	6996.14645	9	2	21 04 18.721	+.139	N	−17 15 07.71	+1.80	1.421179
60 03 08.65	7002.15060	2	2	21 33 58.234	+.096	N	−15 15 00.52	−0.33	1.451106
60 03 11.65	7005.15252	2	2	21 48 34.003	+.016		−14 09		1.465640
60 03 13.65	7007.15374	1	2	21 58 13.032	+.167	N	−13 23 04.13	+0.95	1.475169
60 03 14.65	7008.15434	9	2	22 03 01.011	+.157	N	−12 59 31.65	+1.31	1.479885
60 03 15.65	7009.15492	3	2	22 07 47.911	+.017	N	−12 35 39.37	−0.07	1.484569
60 03 23.65	7017.15922	6	2	22 45 32.662	+.137	N	− 9 12 59.63	+1.44	1.520799
60 03 24.65	7018.15971	3	2	22 50 12.098	+.127	N	− 8 46 24.19	+1.68	1.525165
60 03 27.66	7021.16115	9	2	23 04 06.231	+.154	N	− 7 25 13.93	+2.93	1.538040
60 04 12.66	7037.16795	6	2	0 17 00.326	+.115	N	+ 0 10 49.19	+0.44	1.600930
60 04 15.66	7040.16915	6	2	0 30 34.491	+.238	N	+ 1 38 16.50	−0.15	1.611615
60 04 16.66	7041.16956	1	2	0 35 05.822	+.095	N	+ 2 07 26.16	+1.12	1.615094
60 04 20.67	7045.17119	1	2	0 53 13.396	+.168	N	+ 4 03 36.28	+1.25	1.628586
60 04 21.67	7046.17160	2	2	0 57 45.823	+.120	N	+ 4 32 28.85	+0.67	1.631850

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

VENUS

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
60 04 22.67	7047.17202	6	2	1 02 18.616	+.129	N	+ 5 01 16.04	-0.11	1.635068
60 04 23.67	7048.17244	1	2	1 06 51.818	+.191	N	+ 5 29 59.48	+1.23	1.638241
60 04 24.67	7049.17287	9	2	1 11 25.396	+.238	N	+ 5 58 34.48	+0.69	1.641368
60 04 25.67	7050.17330	2	2	1 15 59.299	+.179	N	+ 6 27 03.29	+1.23	1.644450
60 04 29.67	7054.17509	1	2	1 34 20.099	+.178	N	+ 8 19 28.49	+0.66	1.656310
60 05 02.67	7057.17650	9	2	1 48 11.954	+.235	N	+ 9 41 57.40	+1.82	1.664711
60 05 04.67	7059.17748	6	2	1 57 29.848	+.164	N	+10 35 51.38	+1.36	1.670074
60 05 05.67	7060.17798	2	2	2 02 09.941	+.128	N	+11 02 25.03	-0.92	1.672685
60 05 06.67	7061.17849	9	2	2 06 50.952	+.224	N	+11 28 47.85	+1.16	1.675248
60 05 07.67	7062.17901	9	2	2 11 32.679	+.207	N	+11 54 52.03	+0.53	1.677762
60 05 15.68	7070.18357	1	2	2 49 39.909	+.106	N	+15 12 30.04	-0.68	1.696135
60 05 16.68	7071.18419	3	2	2 54 30.431	+.173	N	+15 35 40.04	+0.12	1.698207
60 05 18.68	7073.18547	8	2	3 04 14.593	+.167	N	+16 20 49.05	+0.68	1.702195
60 05 31.69	7086.19506	9	2	4 09 20.423	+.107	N	+20 30 01.11	-0.31	1.722808
60 06 01.69	7087.19589	8	2	4 14 28.535	+.087	N	+20 45 35.26	-0.24	1.724002
60 06 02.69	7088.19673	2		4 19		N	+21 00 33.80	-1.72	1.725140
60 06 05.69	7091.19931	6	2	4 35 11.191	+.089	N	+21 42 04.22	-0.28	1.728217
60 06 07.70	7093.20109	8	2	4 45 38.290	+.137	N	+22 06 43.12	+0.63	1.729987
60 06 08.70	7094.20199	2	2	4 50 53.104	+.094	N	+22 18 04.59	-0.87	1.730788
60 06 09.70	7095.20290	8	2	4 56 08.864	+.148	N	+22 28 49.95	-0.57	1.731533
60 06 10.70	7096.20383	6	2	5 01 25.341	+.114	N	+22 38 56.44	-0.63	1.732221
60 07 04.72	7120.22730	1		7 09		S	+23 16 17.08	+0.95	1.731094
60 07 05.72	7121.22826	9	1	7 15 16.328	+.175	S	+23 09 02.71	-2.02	1.730302
60 07 06.72	7122.22922	8	1	7 20 35.566	+.092	S	+23 01 12.28	+0.05	1.729452
60 07 07.73	7123.23017	2	1	7 25 54.440	+.282	S	+22 52 39.36	+0.36	1.728544
60 07 08.73	7124.23111	9	1	7 31 12.252	+.110	S	+22 43 24.54	-0.68	1.727579
60 07 09.73	7125.23204	1	1	7 36 29.575	+.185	S	+22 33 30.39	-0.95	1.726556
60 07 13.73	7129.23567	1	1	7 57 30.347	+.162	N	+21 47 21.27	-1.36	1.721896
60 07 15.73	7131.23742	2	1	8 07 55.371	+.205	N	+21 20 26.49	-1.84	1.719222
60 07 16.73	7132.23828	9	1	8 13 06.141	-.046	N	+21 06 04.35	-1.12	1.717799
60 07 17.73	7133.23913	1	1	8 18 16.301	+.104	N	+20 51 05.30	-0.77	1.716318
60 07 18.73	7134.23996	9	1	8 23 25.246	+.086	N	+20 35		1.714778
60 07 22.74	7138.24318	4		8 43		N	+19 27 20.61	-1.50	1.708046
60 07 23.74	7139.24395	1	1	8 48 53.668	+.122	N	+19 08 54.89	-1.26	1.706220
60 07 24.74	7140.24471	9	1	8 53 55.860	+.049	N	+18 49 57.48	-0.54	1.704336
60 07 31.74	7147.24964	9	1	9 28 38.640	+.022	N	+16 23 02.87	-0.99	1.689570
60 08 02.75	7149.25092	9	1	9 38 23.087	-.006	N	+15 36 53.33	-0.61	1.684856
60 08 04.75	7151.25216	1	1	9 48 03.022	+.061	N	+14 49 01.71	-1.03	1.679932
60 08 05.75	7152.25275	4	1	9 52 51.188	-.019	N	+14 24 29.63	-1.35	1.677392
60 08 10.75	7157.25555	9	1	10 16 36.274	+.002	N	+12 16 17.21	-1.35	1.663935
60 08 18.75	7165.25945	4	1	10 53 47.029	+.087	N	+ 8 34 49.23	-0.55	1.639832
60 08 19.75	7166.25990	4	1	10 58 22.134	+.010	N	+ 8 05 58.22	-0.81	1.636599
60 08 23.76	7170.26161	6		11 16		N	+ 6 08 31.69	-1.69	1.623190
60 08 26.76	7173.26282	4	1	11 30 10.800	+.094	N	+ 4 38 39.86	-0.64	1.612636
60 08 27.76	7174.26321	1	1	11 34 41.278	+.015	N	+ 4 08 24.96	-1.08	1.609025
60 08 28.76	7175.26360	1	1	11 39 11.429	+.021	N	+ 3 38 02.17	-2.26	1.605369
60 09 01.76	7179.26511	4	1	11 57 08.827	+.105	N	+ 1 35 38.54	-1.69	1.590307
60 09 03.76	7181.26585	1	1	12 06 06.027	+.062	N	+ 0 34 03.13	-0.64	1.582519
60 09 04.76	7182.26622	1		12 10		N	+ 0 03 09.45	-2.52	1.578565
60 09 14.76	7192.26994	9	1	12 55 21.984	+.030	N	- 5 04 49.59	+0.40	1.536869
60 09 15.77	7193.27032	4	1	12 59 52.105	+.076	N	- 5 35 19.63	-0.75	1.532490
60 09 16.77	7194.27071	1	1	13 04 22.592	+.068	N	- 6 05 43.43	-2.04	1.528073
60 09 27.77	7205.27546	3	1	13 54 36.253	+.123	N	-11 29 15.66	-2.49	1.477055
60 10 03.77	7211.27852	9	1	14 22 40.114	-.022	N	-14 13 36.80	+0.81	1.447452
60 10 10.78	7218.28263	9	1	14 56 11.702	-.001	N	-17 09 58.54	+1.64	1.411517

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

VENUS

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
60 11 02.80	7241.30074	9	1	16 53 01.344	-.012	N	-24 00 23.67	+0.80	1.283553
60 11 04.80	7243.30260	9	1	17 03 35.973	+.038	N	-24 20 44.36	+0.79	1.271756
60 11 08.80	7247.30641	4	1	17 24 52.739	+.076	N	-24 52 59.92	+0.91	1.247880
60 11 14.81	7253.31227	1	1	17 56 59.714	+.106	N	-25 19 40.23	-0.41	1.211370
60 11 17.81	7256.31522	4	1	18 13 04.595	+.003	N	-25 23 00.23	-0.40	1.192801
60 11 21.81	7260.31912	6	1	18 34 28.595	+.093	S	-25 16 59.85	+1.18	1.167708
60 12 02.82	7271.32922	9	1	19 32 26.166	.000	S	-24 00 24.03	-2.30	1.096790
60 12 05.83	7274.33173	9	1	19 47 52.835	+.031	S	-23 24 48.42	-0.18	1.077004
60 12 09.83	7278.33485	6	1	20 08 09.309	-.021	S	-22 28 16.09	+2.07	1.050351
60 12 30.84	7299.34627	6	1	21 47 27.096	+.110		-15 08		0.905375
61 01 05.84	7305.34787	2	1	22 13 24.707	+.113	S	-12 30 03.11	+0.13	0.862522
61 01 13.84	7313.34886	9	1	22 46 22.619	+.067	S	- 8 44 03.04	+0.85	0.804628
61 01 30.84	7330.34674	9	1	23 50 20.601	.000	S	- 0 18 37.85	-0.62	0.679259
61 02 10.84	7341.34206	9	1	0 26 57.021	-.016	S	+ 5 02 33.10	+0.14	0.597613
61 02 17.83	7348.33741	9		0 47		S	+ 8 15 01.39	-0.11	0.546156
61 03 03.82	7362.32245	9	1	1 21 25.353	-.183	S	+13 48 32.57	-0.85	0.446802
61 03 10.81	7369.31081	4	1	1 32 13.522	-.133	S	+15 56 03.49	-0.84	0.400876
61 03 17.79	7376.29530	9	1	1 37 24.814	-.329	S	+17 24 57.38	-1.72	0.359372
61 03 20.78	7379.28724	6	1	1 37 36.425	-.281	S	+17 48 03.15	-1.76	0.343426
61 03 27.76	7386.26486	4	1	1 32 53.301	-.211	S	+17 58 10.88	-1.40	0.312025
61 03 29.75	7388.25757	8	1	1 30 14.788	-.227	S	+17 48 24.16	-1.11	0.304864
61 03 30.75	7389.25379	4	1	1 28 43.689	-.416	S	+17 41 14.25	-2.81	0.301632
61 04 02.74	7392.24198	1	1	1 23 30.234	-.300	S	+17 10 49.62	-3.35	0.293427
61 04 07.72	7397.22119	2		1 13		S	+15 51 59.21	-1.34	0.285174
61 04 17.67	7407.17980	8	2	0 52 51.613	-.116	S	+12 06 45.21	-3.28	0.290686
61 04 20.66	7410.16849	3	2	0 48 22.031	-.100		+10 56		0.297967
61 04 28.64	7418.14253	3	2	0 42 24.961	-.088	N	+ 8 16 40.97	-1.93	0.328376
61 05 02.63	7422.13197	6	2	0 42 56.692	-.037	N	+ 7 20 30.16	+0.05	0.348611
61 05 03.62	7423.12958	4	2	0 43 25.884	+.050	N	+ 7 09 13.77	-0.14	0.354102
61 05 05.62	7425.12507	2	2	0 44 48.110	-.127	N	+ 6 50 02.64	-0.54	0.365546
61 05 20.60	7440.10109	1	2	1 09 18.829	+.044	N	+ 6 35 01.32	+0.57	0.465802
61 05 23.59	7443.09792	6	2	1 16 34.040	-.005	N	+ 6 54 27.76	-0.76	0.487973
61 05 24.59	7444.09696	4	2	1 19 07.335	+.053	N	+ 7 02 16.22	+0.36	0.495470
61 06 02.59	7453.09013	9	2	1 44 45.035	+.067	N	+ 8 36 33.45	+1.63	0.564819
61 06 05.58	7456.08850	9	2	1 54 13.081	+.162	N	+ 9 15 42.96	+1.32	0.588479
61 06 07.58	7458.08756	2	2	2 00 45.051	+.178	N	+ 9 43 24.14	-0.35	0.604348
61 06 08.58	7459.08713	4		2 04		N	+ 9 57 39.37	-1.37	0.612304
61 06 12.58	7463.08571	9	2	2 17 47.440	+.084	N	+10 57 02.09	+0.17	0.644243
61 06 13.58	7464.08542	6	2	2 21 18.767	+.096	N	+11 12 19.22	-0.94	0.652249
61 06 14.58	7465.08515	2	2	2 24 52.231	+.083	N	+11 27 47.53	+0.31	0.660261
61 06 16.58	7467.08469	9	2	2 32 05.466	+.078	N	+11 59 04.24	+1.23	0.676299
61 06 19.58	7470.08418	8	2	2 43 10.541	+.062	N	+12 46 36.15	+1.21	0.700377
61 06 30.58	7481.08398	2	2	3 26 15.673	+.103	N	+15 40 25.02	+0.53	0.788514
61 07 14.58	7495.08725	6	2	4 26 10.605	+.074	N	+18 55 14.83	+0.18	0.898798
61 07 19.58	7500.08926	2	2	4 48 47.519	+.002	N	+19 50 52.66	-0.32	0.937301
61 07 21.59	7502.09017	9	2	4 58 00.021	+.098	N	+20 10 29.05	+1.36	0.952551
61 07 26.59	7507.09272	8	2	5 21 23.276	+.143	N	+20 51 57.44	+0.75	0.990281
61 07 27.59	7508.09327	4	2	5 26 07.456	+.102	N	+20 58 53.09	+0.24	0.997755
61 07 28.59	7509.09383	9	2	5 30 52.777	+.086	N	+21 05 20.32	-0.23	1.005204
61 08 01.59	7513.09620	0	2	5 50 04.632	+.121	N	+21 26 15.07	-0.51	1.034738
61 08 13.60	7525.10420	1	2	6 48 56.420	+.139	S	+21 37 50.21	-0.06	1.120447
61 08 14.60	7526.10491	8	2	6 53 54.150	+.210	S	+21 35 07.62	-1.11	1.127379
61 08 16.60	7528.10633	6	2	7 03 50.176	+.116	S	+21 28 00.86	-0.49	1.141141
61 08 17.60	7529.10704	4	2	7 08 48.705	+.284	S	+21 23 34.71	-0.67	1.147972
61 08 18.60	7530.10776	2	2	7 13 47.084	+.162	C	+21 18 33.76	-0.78	1.154769

VENUS

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
61 08 22.61	7534.11062	0	2	7 33 41.603	+.165	S	+20 52 41.83	-0.14	1.181620
61 08 29.61	7541.11559	6	2	8 08 27.657	+.172	S	+19 45 14.18	+0.22	1.227279
61 08 30.61	7542.11629	0		8 13		S	+19 33 20.43	+0.56	1.233657
61 08 31.61	7543.11698	0		8 18		S	+19 20 52.66	+0.23	1.239997
61 09 06.62	7549.12103	6	2	8 47 51.457	+.111	S	+17 54 47.91	-0.72	1.277217
61 09 11.62	7554.12423	1	2	9 12 11.511	+.118	S	+16 28 58.63	-0.14	1.307125
61 09 12.62	7555.12485	2	2	9 17 01.669	+.157	S	+16 10 22.43	+0.59	1.312983
61 09 13.62	7556.12546	9	2	9 21 51.157	+.192	S	+15 51 15.63	-1.44	1.318801
61 09 18.62	7561.12840	2	2	9 45 48.243	+.072	S	+14 09 14.17	-0.14	1.347274
61 09 21.63	7564.13007	6	2	10 00 02.555	+.144	S	+13 03 01.57	-0.65	1.363869
61 09 22.63	7565.13061	9	2	10 04 46.003	+.160	S	+12 40 10.64	-1.22	1.369320
61 09 25.63	7568.13219	9	2	10 18 52.477	+.122	S	+11 29 29.20	-1.40	1.385428
61 09 29.63	7572.13420	9	2	10 37 33.055	+.210	S	+ 9 50 32.27	-2.08	1.406323
61 10 04.63	7577.13658	8	2	11 00 42.047	+.149	S	+ 7 40 19.38	-1.27	1.431469
61 10 05.63	7578.13704	6	2	11 05 18.560	+.192	S	+ 7 13 31.13	-1.15	1.436366
61 10 06.63	7579.13750	9	2	11 09 54.730	+.288	S	+ 6 46 27.85	-2.42	1.441218
61 10 10.63	7583.13928	2		11 28		S	+ 4 56 19.33	-0.57	1.460177
61 10 18.64	7591.14273	8	2	12 04 47.083	+.211	S	+ 1 08 37.72	-1.88	1.495952
61 10 19.64	7592.14316	2	2	12 09 20.681	+.192	S	+ 0 39 44.38	-0.50	1.500228
61 10 23.64	7596.14488	8	2	12 27 35.910	+.121	S	- 1 16 25.72	-2.19	1.516898
61 10 24.64	7597.14532	6	2	12 32 10.136	+.099	S	- 1 45 30.19	-0.72	1.520958
61 10 25.64	7598.14576	8	2	12 36 44.682	+.151	S	- 2 14 36.77	-1.34	1.524976
61 10 26.64	7599.14620	2	2	12 41 19.482	+.178	S	- 2 43 40.74	-0.06	1.528949
61 10 27.64	7600.14664	9	2	12 45 54.666	+.258	S	- 3 12 46.32	-1.70	1.532880
61 11 01.64	7605.14894	8	2	13 08 56.221	+.121	S	- 5 37 17.79	-0.81	1.551870
61 11 17.65	7621.15758	9	2	14 24 29.410	+.185	S	-12 55 04.12	-1.37	1.605113
61 11 21.66	7625.16016	2	2	14 43 59.460	+.101	S	-14 34 10.33	+0.36	1.616682
61 11 28.66	7632.16519	2	2	15 18 51.363	+.202	S	-17 13 08.95	-0.46	1.635322
61 11 30.66	7634.16675	3	2	15 28 59.627	+.011	S	-17 54 38.16	+0.85	1.640269
61 12 03.66	7637.16920	1	2	15 44 21.537	+.112	S	-18 53 15.32	+0.53	1.647370
61 12 08.67	7642.17356	9	2	16 10 21.828	+.209	S	-20 20 24.51	-1.13	1.658347
61 12 14.67	7648.17921	3	2	16 42 10.298	+.020	S	-21 45 41.19	+0.84	1.670117
61 12 15.68	7649.18019	6	2	16 47 31.853	+.012	S	-21 57 43.99	-0.40	1.671933
61 12 27.69	7661.19262	6	2	17 52 48.001	+.134	S	-23 29 00.46	+1.45	1.690657
62 01 02.69	7667.19909	6	2	18 25 47.561	+.078	N	-23 36 04.58	+1.04	1.697892
62 01 04.70	7669.20125	1	2	18 36 47.407	+.049	N	-23 32 36.70	-1.76	1.699982
62 01 07.70	7672.20446	1		18 53		N	-23 21 49.65	+0.24	1.702811
62 01 11.70	7676.20867	3	2	19 15 06.630	-.037	N	-22 57 23.13	-0.63	1.706014
62 01 12.70	7677.20971	2	2	19 20 33.002	-.005	N	-22 49 28.51	+0.19	1.706715
62 01 16.71	7681.21377	1	2	19 42 10.862	+.038	N	-22 10 56.41	-0.24	1.709128
62 01 17.71	7682.21476	2	2	19 47 33.169	-.004	N	-21 59 34.81	+0.92	1.709635
62 02 06.73	7702.23189	6		21 31		N	-16 05 45.61	-0.52	1.711612
62 02 07.73	7703.23260	8	1	21 36 06.598	+.104	N	-15 42 31.92	+1.74	1.711284
62 02 10.73	7706.23464	1	1	21 50 53.442	+.193	N	-14 30 26.11	-0.10	1.710052
62 02 14.73	7710.23718	2	1	22 10 19.259	+.191		-12 48		1.707828
62 02 15.73	7711.23778	8	1	22 15 07.838	+.122	S	-12 22 29.96	-0.77	1.707170
62 03 01.74	7725.24506	6	C	23 20 50.397	+.115	S	- 5 45 19.80	+0.84	1.693582
62 03 02.74	7726.24551	9	1	23 25 26.363	+.071	S	- 5 15 25.58	-0.57	1.692288
62 03 04.74	7728.24641	1	1	23 34 36.767	+.067	S	- 4 15 07.68	+1.50	1.689564
62 03 07.74	7731.24771	2	1	23 48 18.916	+.012		- 2 43		1.685129
62 03 08.74	7732.24813	6	1	23 52 52.274	+.054	S	- 2 13 19.79	+0.45	1.683557
62 03 15.75	7739.25103	1	1	0 24 39.176	+.106	S	+ 1 21 53.62	+0.39	1.671226
62 03 16.75	7740.25144	2	1	0 29 11.211	+.136	S	+ 1 52 40.89	+1.98	1.669275
62 03 18.75	7742.25226	1	1	0 38 15.195	-.008	S	+ 2 54 03.87	+0.34	1.665233
62 03 27.75	7751.25607	6	1	1 19 14.632	+.151	S	+ 7 26 10.93	+1.18	1.644683

VENUS

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
62 03 28.75	7752.25651	9	1	1 23 49.630	−.045	S	+ 7 55 41.59	−2.00	1.642157
62 03 29.75	7753.25697	1	1	1 28 25.471	+.058	S	+ 8 25 07.39	+0.68	1.639582
62 04 10.76	7765.26302	6		2 24		S	+13 59 15.57	−0.85	1.604627
62 04 15.76	7770.26597	1	1	2 48 26.957	−.015	S	+16 05 13.12	−0.44	1.587812
62 04 19.76	7774.26854	6	1	3 07 56.108	+.201	S	+17 38 46.76	+0.24	1.573414
62 04 21.76	7776.26990	9	1	3 17 46.758	−.042		+18 22		1.565902
62 04 24.77	7779.27204	1	1	3 32 41.318	−.008		+19 25		1.554243
62 04 25.77	7780.27277	8	1	3 37 41.677	−.013		+19 45		1.550252
62 04 26.77	7781.27352	6	1	3 42 43.141	+.009	S	+20 04 35.12	+0.37	1.546209
62 05 03.77	7788.27910	1	1	4 18 22.780	+.049	S	+22 04 12.81	+0.04	1.516417
62 05 04.77	7789.27995	2	1	4 23 32.494	+.132	S	+22 18 58.10	+0.98	1.511945
62 05 09.78	7794.28431	6	1	4 49 33.406	−.011	S	+23 23 12.83	+0.65	1.488774
62 05 15.78	7800.28981	6	1	5 21 09.324	+.050	S	+24 18 29.10	+0.50	1.459216
62 05 16.79	7801.29075	2	1	5 26 27.027	+.073	S	+24 25 17.50	+0.72	1.454110
62 05 18.79	7803.29264	9	1	5 37 03.369	+.073	S	+24 36 45.42	−1.31	1.443746
62 05 25.79	7810.29928	9	1	6 14 14.516	+.030	S	+24 54 33.25	−1.43	1.405930
62 06 08.81	7824.31196	9	1	7 27 45.599	−.032	N	+23 45 41.17	+0.58	1.323331
62 06 10.81	7826.31363	1	1	7 38 02.752	+.066	N	+23 24 52.47	−0.46	1.310800
62 06 16.81	7832.31828	1	1	8 08 25.038	−.049	N	+22 07 16.13	+0.14	1.272202
62 06 18.81	7834.31971	6	1	8 18 21.998	−.004	N	+21 36 32.59	−1.07	1.259021
62 06 19.82	7835.32040	7	1	8 23 18.400	+.045		+21 20		1.252374
62 07 11.83	7857.33123	6	1	10 05 41.110	−.018	N	+13 21 38.49	−1.29	1.097648
62 07 13.83	7859.33180	4	1	10 14 23.886	−.054	N	+12 28 55.15	−0.60	1.082861
62 07 26.83	7872.33406	2	1	11 08 54.574	+.047	N	+ 6 22 53.81	−0.15	0.984654
62 08 01.83	7878.33435	6	1	11 32 59.511	+.047	N	+ 3 24 45.32	−0.74	0.938318
62 08 02.83	7879.33436	4	1	11 36 56.835	−.016	N	+ 2 54 47.02	+0.92	0.930542
62 08 08.83	7885.33420	9		12 00		N	− 0 06 08.40	−0.55	0.883608
62 08 22.83	7899.33253	7	1	12 53 09.246	−.002		− 7 03		0.772968
62 08 23.83	7900.33235	0	1	12 56 50.019	+.032	N	− 7 33 03.33	+0.25	0.765045
62 08 28.83	7905.33131	7	1	13 15 02.918	−.025	N	− 9 56 04.44	−0.37	0.725447
62 08 29.83	7906.33108	1		13 18		N	−10 24 06.62	−0.06	0.717534

MARS

Date	J.E.D.	O	Obs. R.A.	(O–C)	Obs. Decl.	(O–C)	Distance
56 08 22.28	5707.78428	8	23 43 19.245	−.171	− 8 34 04.61	+0.26	0.395580
56 08 23.28	5708.78116	3	23 42 45.910	−.137	− 8 38 27.13	−0.69	0.393528
56 08 25.27	5710.77484	1	23 41 30.878	−.163	− 8 47 33.90	−0.30	0.389780
56 08 26.27	5711.77163	3	23 40 49.410	−.147	− 8 52 17.93	−0.45	0.388088
56 09 09.22	5725.72427	5	23 27 37.956	−.138	−10 00 50.26	−0.49	0.378384
56 09 10.22	5726.72078	1	23 26 32.643	−.162	−10 05 09.71	−0.95	0.378749
56 09 13.21	5729.71033	5	23 23 16.396	−.160	−10 17 01.45	−1.83	0.380715
56 09 18.19	5734.69301	5	23 17 58.790	−.172	−10 32 16.94	−1.06	0.386862
56 09 19.18	5735.68958	1	23 16 58.227	−.150	−10 34 34.29	−1.39	0.388518
56 09 21.18	5737.68277	5	23 15 01.239	−.173	−10 38 16.79	−0.62	0.392248
56 09 23.17	5739.67603	3	23 13 10.815	−.122	−10 40 50.16	−0.71	0.396531
56 09 25.16	5741.66938	8	23 11 27.836	−.161	−10 42 10.13	+0.02	0.401360
56 10 01.15	5747.65006	1	23 07 13.104	−.142	−10 38 38.89	+0.30	0.419035
56 10 02.14	5748.64694	8	23 06 39.556	−.138	−10 36 56.42	+0.21	0.422433
56 10 03.14	5749.64386	3	23 06 08.780	−.125	−10 34 53.75	+0.86	0.425955
56 10 06.13	5752.63480	8	23 04 53.665	−.120	−10 26 52.88	+0.15	0.437252
56 10 09.12	5755.62605	1	23 04 05.333	−.107	−10 16 00.36	+0.60	0.449601
56 10 10.12	5756.62320	3	23 03 55.292	−.092	−10 11 45.49	+1.41	0.453940
56 10 11.12	5757.62039	8	23 03 48.238	−.132	−10 07 14.65	+0.32	0.458387
56 10 13.11	5759.61487	5	23 03 43.291	−.122	− 9 57 18.54	+0.31	0.467596

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

MARS

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
56 10 14.11	5760.61217	1		23 03 45.369	-.080		- 9 51 54.91	+0.51	0.472353
56 10 15.10	5761.60949	3		23 03 50.395	-.070		- 9 46 14.93	+0.51	0.477210
56 10 16.10	5762.60685	8		23 03 58.299	-.130		- 9 40 18.65	+0.74	0.482164
56 10 17.10	5763.60425	1		23 04 09.206	-.108		- 9 34 07.68	-0.05	0.487214
56 10 24.08	5770.58692	5		23 06 43.936	-.099		- 8 43 52.41	+0.29	0.525108
58 10 07.33	6483.83972	8		4 02 48.859	-.120		+19 11 43.08	-0.69	0.563985
58 10 10.33	6486.83167	8		4 03 01.003	-.143		+19 18 43.49	+0.05	0.551927
58 10 11.32	6487.82890	6		4 02 57.689	-.069		+19 20 48.40	-0.27	0.548068
58 10 13.32	6489.82323	2		4 02 39.564	-.108		+19 24 36.57	-0.44	0.540610
58 10 16.31	6492.81440	6		4 01 44.158	-.040		+19 29 22.68	-0.19	0.530134
58 10 17.31	6493.81137	2		4 01 18.044	-.138		+19 30 42.67	-0.20	0.526845
58 10 30.26	6506.76825	5		3 50 17.695	-.109		+19 35 48.33	+0.80	0.495128
58 10 31.26	6507.76468	8		3 49 04.591	-.162		+19 35 12.17	-0.21	0.493655
58 11 01.26	6508.76107	3		3 47 48.891	-.163		+19 34 29.23	+0.44	0.492337
58 11 04.25	6511.75009	2		3 43 47.380	-.155		+19 31 27.54	-0.84	0.489344
58 11 06.24	6513.74265	3		3 40 55.954	-.174		+19 28 47.43	-0.51	0.488182
58 11 08.23	6515.73514	6		3 37 58.046	-.090		+19 25 36.97	-0.15	0.487714
58 11 10.22	6517.72757	2		3 34 55.065	-.156		+19 21 57.89	-0.63	0.487960
58 11 12.21	6519.71996	6		3 31 48.937	-.226		+19 17 54.43	-0.89	0.488938
58 11 14.21	6521.71234	2		3 28 41.630	-.183		+19 13 30.62	-0.97	0.490660
58 11 20.18	6527.68958	2		3 19 29.823	-.107		+18 59 02.79	-0.25	0.500323
58 11 21.18	6528.68583	8		3 18 01.465	-.158		+18 56 32.92	-0.69	0.502586
58 11 23.17	6530.67839	1		3 15 09.757	-.120		+18 51 36.59	-0.03	0.507665
58 11 24.17	6531.67470	5		3 13 46.567	-.204		+18 49 10.42	+0.03	0.510479
58 11 25.17	6532.67103	8		3 12 25.566	-.151		+18 46 45.58	-0.98	0.513473
58 11 27.16	6534.66378	6		3 09 50.205	-.135		+18 42 07.46	-1.09	0.519997
58 11 28.16	6535.66019	2		3 08 36.083	-.197		+18 39 54.86	-0.71	0.523524
58 12 01.14	6538.64962	6		3 05 09.890	-.096		+18 33 46.92	-0.83	0.535141
58 12 02.14	6539.64616	2		3 04 06.701	-.150		+18 31 56.99	-0.26	0.539353
58 12 07.12	6544.62940	6		2 59 36.947	-.105		+18 24 36.05	-1.13	0.562862
58 12 11.11	6548.61666	6		2 56 59.793	-.130		+18 21 23.24	-0.89	0.584462
58 12 14.10	6551.60752	1		2 55 37.770	-.049		+18 20 44.92	-0.06	0.602173
58 12 17.09	6554.59874	6		2 54 46.329	-.141		+18 21 41.11	-0.39	0.621078
58 12 23.08	6560.58221	5		2 54 33.455	-.102		+18 28 25.20	+0.55	0.662122
60 11 08.38	7246.88565	6		7 17 18.945	+.033		+23 42 25.61	-0.54	0.786321
60 11 09.38	7247.88339	4		7 17 59.912	-.048		+23 43 45.30	-0.33	0.780139
60 11 12.37	7250.87641	9		7 19 44.693	-.032		+23 48 24.63	-0.53	0.761886
60 11 13.37	7251.87401	6		7 20 13.337	+.011		+23 50 13.01	+0.32	0.755910
60 11 16.36	7254.86658	9		7 21 19.417	+.001		+23 56 21.07	+0.34	0.738353
60 11 19.35	7257.85880	2		7 21 54.851	.000		+24 03 39.44	+0.17	0.721430
60 11 20.35	7258.85612	9		7 21 59.614	-.028		+24 06 21.98	+0.54	0.715948
60 11 22.35	7260.85065	8		7 21 58.440	-.041		+24 12 09.89	+0.11	0.705247
60 12 01.32	7269.82392	6		7 18 51.667	+.055		+24 44 33.84	-0.11	0.662199
60 12 06.30	7274.80757	9		7 14 58.156	-.052		+25 06 18.04	+0.31	0.642622
60 12 10.29	7278.79375	2		7 10 46.770	-.019		+25 24 52.63	-0.23	0.629635
61 01 02.20	7301.70567	6		6 34 17.094	-.122		+26 56 36.62	-0.64	0.613678
61 01 04.19	7303.69784	9		6 30 51.659	-.166		+27 01 05.40	+0.03	0.617534
61 01 06.19	7305.69007	2		6 27 31.428	-.115		+27 04 50.62	+0.74	0.622238
61 01 07.18	7306.68621	3		6 25 53.642	-.153		+27 06 26.33	+0.15	0.624905
61 01 09.17	7308.67856	6		6 22 43.845	-.186		+27 09 07.94	+1.01	0.630862
61 01 10.17	7309.67477	8		6 21 12.236	-.127		+27 10 12.31	+0.33	0.634148
61 01 11.17	7310.67101	9		6 19 42.904	-.138		+27 11 07.70	+0.63	0.637636
61 01 13.16	7312.66358	5		6 16 51.954	-.129		+27 12		0.645210
61 01 14.15	7313.65991	9		6 15 30.558	-.180		+27 12 56.25	+0.16	0.649291
61 01 26.11	7325.61882	9		6 03			+27 09 18.33	-0.14	0.712241

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
MARS									
61 01 29.10	7328.60947	1		6 01 48.936	-.155		+27 06 36.63	+0.23	0.731536
61 01 30.10	7329.60643	6		6 01 22.688	-.183		+27 05		0.738242
61 02 05.08	7335.58909	1		5 59 59.636	-.130		+26 58 54.43	-0.46	0.781097
61 02 06.08	7336.58634	6		5 59 57.887	-.091		+26 57 42.76	+0.28	0.788644
61 02 15.06	7345.56326	6		6 02 07.155	-.088		+26 46 04.63	-0.21	0.861025
61 02 28.03	7358.53462	6		6 12 01.231	-.082		+26 27 02.87	-0.39	0.976301
JUPITER									
56 01 27.28	5499.78638	0		10 06 17.803	-.034		+12 51 12.81	-0.10	4.441761
56 02 08.24	5511.74974	4		10 00 42.591	-.071		+13 23 30.14	-1.03	4.390571
56 02 19.21	5522.71587	5		9 55 09.775	-.051		+13 54 15.03	-0.30	4.382714
56 02 21.20	5524.70971	8		9 54 09.058	-.071		+13 59 43.68	-0.02	4.385372
56 02 22.20	5525.70663	1		9 53 38.851	-.070		+14 02 26.76	+0.52	4.387169
56 02 23.20	5526.70355	0		9 53 08.724	-.102		+14 05 07.18	-0.49	4.389275
56 02 24.20	5527.70047	0		9 52 38.795	-.078		+14 07 48.21	+0.51	4.391689
56 02 26.19	5529.69433	5		9 51 39.337	-.126		+14 13 03.58	+0.09	4.397435
56 02 27.19	5530.69126	1		9 51 09.949	-.091		+14 15 38.93	-0.09	4.400765
56 03 01.18	5533.68206	4		9 49			+14 23 15.02	+0.21	4.412560
56 03 03.17	5535.67595	3		9 48 46.591	-.083		+14 28 08.15	-0.54	4.421914
56 03 05.16	5537.66985	8		9 47 51.346	-.091		+14 32 53.67	-0.11	4.432441
56 03 21.12	5553.62180	5		9 41 33.233	-.091		+15 04 20.08	-0.11	4.556268
56 03 22.11	5554.61885	0		9 41 14.311	+.002		+15 05 51.21	-0.21	4.566152
56 03 27.10	5559.60421	8		9 39 48.589	-.094		+15 12 35.37	-0.13	4.618899
56 04 01.08	5564.58976	1		9 38 39.485	-.078		+15 17 50.82	-0.03	4.676811
57 02 21.29	5890.79604	8		12 01 47.658	-.085		+ 1 27 07.88	-0.71	4.545205
57 02 22.29	5891.79305	2		12 01			+ 1 29 47.33	+0.54	4.537876
57 02 24.28	5893.78705	2		12 00 38.847	-.037		+ 1 35 10.16	-0.90	4.524040
57 03 04.26	5901.76289	1		11 57 17.738	-.098		+ 1 58 14.07	-0.58	4.480140
57 03 11.24	5908.74157	5		11 54 06.794	-.146		+ 2 19 41.20	+0.03	4.457401
57 03 16.22	5913.72629	2		11 51 45.826	-.100		+ 2 35		4.450347
57 03 17.22	5914.72323	1		11 51 17.435	-.067		+ 2 38 25.38	+0.64	4.449860
57 03 18.22	5915.72018	3		11 50 48.945	-.115		+ 2 41 31.78	+0.06	4.449680
57 03 22.20	5919.70794	2		11 48 55.365	-.057		+ 2 53 54.00	-0.23	4.452038
57 03 24.20	5921.70183	1		11 47 58.860	-.090		+ 3 00 00.37	-0.14	4.455061
57 03 30.18	5927.68353	2		11 45 12.778	-.036		+ 3 17 46.45	-0.27	4.471437
57 03 31.18	5928.68049	1		11 44 45.744	-.071		+ 3 20 38.30	-0.08	4.475218
57 04 01.17	5929.67745	2		11 44 19.064	-.004		+ 3 23 28.03	+0.03	4.479295
57 04 07.15	5935.65929	2		11 41 44.841	-.054		+ 3 39 36.05	+0.72	4.509846
57 04 08.15	5936.65627	2		11 41 20.283	-.131		+ 3 42 07.80	+0.51	4.515925
57 04 10.15	5938.65026	8		11 40 32.509	-.116		+ 3 47 02.12	-0.24	4.528904
57 04 12.14	5940.64427	8		11 39 46.413	-.092		+ 3 51 45.32	0.00	4.542949
57 04 14.13	5942.63829	1		11 39 02.070	-.078		+ 3 56 15.52	+0.28	4.558039
57 04 15.13	5943.63532	2		11 38 40.602	-.073		+ 3 58 24.86	-0.33	4.565967
57 04 16.13	5944.63234	1		11 38 19.564	-.119		+ 4 00 31.22	-0.42	4.574144
58 04 02.26	6295.76155	8		13 48 44.302	-.074		- 9 34 13.88	+0.46	4.485155
58 04 03.25	6296.75851	6		13 48 17.563	-.076		- 9 31 41.88	-1.38	4.480418
58 04 04.25	6297.75547	1		13 47 50.506	-.116		- 9 29 06.12	-0.84	4.475970
58 04 05.25	6298.75242	3		13 47 23.254	-.074		- 9 26 28.67	+0.07	4.471817
58 04 13.22	6306.72798	1		13 43 37.636	-.085		- 9 05 03.22	-0.55	4.449287
58 04 15.22	6308.72185	6		13 42 39.903	-.065		- 8 59 35.65	-0.01	4.446673
58 04 17.21	6310.71572	3		13 41 41.953	-.049		- 8 54 07.97	+0.23	4.445279
58 04 18.21	6311.71265	2		13 41 12.909	-.087		- 8 51 24.77	-0.15	4.445040
58 04 20.20	6313.70652	1		13 40 14.922	-.110		- 8 45 58.62	-0.17	4.445475

JUPITER

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
58 04 24.19	6317.69427	5		13 38 19.857	-.083		- 8 35 13.29	+0.04	4.449992
58 04 26.18	6319.68816	3		13 37 23.039	-.092		- 8 29 56.80	-0.53	4.454056
58 05 09.14	6332.64867	2		13 31 37.076	-.037		- 7 58 09.23	+0.05	4.508726
58 05 10.14	6333.64566	3		13 31 12.707	-.079		- 7 55 56.82	+0.56	4.514882
58 05 14.13	6337.63366	6		13 29 39.602	-.061		- 7 47 36.20	-0.04	4.542158
58 05 15.13	6338.63067	1		13 29 17.391	-.105		- 7 45 38.23	-0.26	4.549624
58 05 17.12	6340.62472	5		13 28 34.543	-.083		- 7 41 50.51	+0.07	4.565311
58 05 22.10	6345.60993	1		13 26 56.444	-.039		- 7 33 17.68	+0.61	4.608772
58 05 24.10	6347.60406	3		13 26 20.975	-.091		- 7 30 17.32	-0.08	4.627772
58 05 27.09	6350.59531	8		13 25 32.212	-.088		- 7 26 12.27	+0.27	4.657899
58 05 30.08	6353.58662	8		13 24 48.833	-.098		- 7 22 40.79	+0.31	4.689874
58 05 31.08	6354.58373	6		13 24 35.654	-.048		- 7 21		4.700924
59 04 18.30	6676.80579	6		15 54 44.223	.000		-19 11 42.23	+0.11	4.518435
59 04 24.28	6682.78778	8		15 52 23.690	-.060		-19 04 26.57	-0.25	4.468678
59 04 25.28	6683.78476	2		15 51 58.454	-.087		-19 03 08.47	-0.18	4.461285
59 05 02.26	6690.76347	2		15 48 49.531	-.029		-18 53 23.10	-0.05	4.417096
59 05 05.25	6693.75428	2		15 47 22.817	-.026		-18 48 53.69	+0.31	4.402353
59 05 06.25	6694.75121	5		15 46 53.246	-.081		-18 47 22.45	-0.15	4.398014
59 05 07.24	6695.74813	3		15 46 23.472	-.059		-18 45 49.63	0.00	4.393967
59 05 09.24	6697.74197	6		15 45 23.200	-.022		-18 42 41.51	+0.26	4.386751
59 05 12.23	6700.73272	6		15 43 51.215	-.035		-18 37 54.18	+0.42	4.378143
59 05 18.21	6706.71418	6		15 40 44.091	+.013		-18 28 07.69	-0.14	4.368968
59 05 20.20	6708.70799	8		15 39 41.293	-.077		-18 24 50.46	-0.36	4.368292
59 05 22.20	6710.70181	8		15 38 38.731	-.075		-18 21 32.55	+0.13	4.368805
59 05 23.19	6711.69872	2		15 38 07.550	-.075		-18 19 54.36	-0.14	4.369504
59 05 25.19	6713.69254	6		15 37 05.462	-.092		-18 16 37.81	+0.26	4.371788
59 05 26.18	6714.68946	2		15 36 34.611	-.102		-18 14 59.76	+0.73	4.373371
59 06 04.16	6723.66178	3		15 32 06.244	-.103		-18 00 51.46	-0.68	4.400706
59 06 05.15	6724.65873	8		15 31 37.840	-.090		-17 59 20.62	+0.28	4.405173
59 06 16.12	6735.62540	2		15 26 52.561	-.132		-17 44 25.78	-0.17	4.472168
59 06 18.11	6737.61941	3		15 26 07.060	-.102		-17 42 03.99	+1.17	4.487680
59 06 19.11	6738.61643	8		15 25 45.159	-.080		-17 40 58.02	-0.03	4.495799
59 06 20.11	6739.61345	6		15 25 23.823	-.051		-17 39 52.62	+0.19	4.504152
59 06 24.10	6743.60161	5		15 24 04.164	-.103		-17 35 52.86	+1.04	4.539860
59 06 28.08	6747.58988	6		15 22 54.441	-.039		-17 32 30.66	+0.65	4.579085
59 06 29.08	6748.58697	2		15 22 38.530	-.110		-17 31 45.98	+0.65	4.589414
59 07 04.07	6753.57252	6		15 21 29.526	-.049		-17 28 40.19	+1.12	4.644015
60 05 16.32	7070.82176	6		18 11 10.528	+.007		-23 02 12.21	+0.44	4.426043
60 05 25.29	7079.79480	2		18 07 43.370	+.026		-23 03 45.30	+0.33	4.346587
60 06 01.27	7086.77346	9		18 04 30.988	-.007		-23 04 54.69	+0.40	4.299047
60 06 02.27	7087.77039	8		18 04 01.617	-.065		-23 05 03.97	+0.41	4.293337
60 06 06.25	7091.75808	6		18 02 00.601	-.048		-23 05 38.57	+0.68	4.273280
60 06 09.24	7094.74880	2		18 00 26.556	+.049		-23 06 02.85	-0.26	4.261200
60 06 10.24	7095.74570	5		17 59 54.616	+.021		-23 06 09.41	+0.40	4.257745
60 06 11.24	7096.74260	6		17 59			-23 06 17.21	-0.45	4.254577
60 06 16.22	7101.72706	1		17 56 38.938	+.037		-23 06 46.91	-0.26	4.243090
60 06 17.22	7102.72394	3		17 56 05.777	-.007		-23 06 50.96	+0.60	4.241671
60 06 19.21	7104.71772	2		17 54 59.385	+.052		-23 06 59.25	+1.02	4.239717
60 06 20.21	7105.71460	6		17 54 26.005	-.046		-23 07 04.63	-0.56	4.239185
60 06 25.19	7110.69903	2		17 51 40.011	-.015		-23 07 16.19	+1.53	4.240963
60 06 26.19	7111.69592	1		17 51 07.062	-.004		-23 07 19.21	+0.22	4.242204
60 06 27.19	7112.69281	6		17 50 34.210	-.031		-23 07 20.91	-0.09	4.243740
60 06 28.18	7113.68971	8		17 50 01.566	-.011		-23 07 21.50	+0.37	4.245567
60 06 29.18	7114.68660	9		17 49 29.058	-.039		-23 07 22.44	+0.18	4.247687
60 07 03.17	7118.67421	1		17 47 21.450	-.026		-23 07 22.43	+0.21	4.259052

JUPITER

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
60 07 06.16	7121.66494	9		17 45 48.778	−.038		−23 07 19.62	+0.36	4.270554
60 07 08.15	7123.65879	2		17 44 48.792	−.016		−23 07 17.72	−0.46	4.279610
60 07 09.15	7124.65572	9		17 44 19.343	−.042		−23 07 15.66	+0.03	4.284548
60 07 10.15	7125.65266	1		17 43 50.344	−.027		−23 07 13.84	+0.17	4.289757
60 07 13.14	7128.64349	9		17 42 25.948	−.011		−23 07 07.86	+0.43	4.306984
60 07 16.13	7131.63437	4		17 41			−23 07 01.16	+0.72	4.326570
60 07 23.11	7138.61333	4		17 38 18.530	−.020		−23 06 46.74	+1.04	4.381048
60 07 24.11	7139.61035	1		17 37 57.090	−.016		−23 06 46.07	+0.15	4.389788
60 07 25.10	7140.60738	9		17 37 36.246	−.071		−23 06 45.02	−0.18	4.398758
60 07 31.08	7146.58973	6		17 35 45.917	−.117		−23 06 40.95	+0.26	4.457170
61 06 17.33	7467.83501	9		20 35 30.569	−.046		−19 10 19.73	+0.16	4.308531
61 06 19.32	7469.82915	6		20 34 55.835	+.028		−19 12 51.40	+0.38	4.288198
61 06 28.30	7478.80240	6		20 31 47.542	−.013		−19 26 00.04	−0.20	4.207995
61 06 29.29	7479.79940	9		20 31 23.686	−.012		−19 27 36.17	+0.58	4.200286
61 06 30.29	7480.79638	8		20 30 59.305	+.007		−19 29 14.45	+0.86	4.192828
61 07 01.29	7481.79337	2		20 30 34.392	+.027		−19 30 54.63	+0.84	4.185622
61 07 04.28	7484.78428	9		20 29 16.492	−.026		−19 36 04.17	+0.45	4.165558
61 07 08.27	7488.77208	9		20 27 26.218	−.015		−19 43 12.81	+1.26	4.142530
61 07 19.23	7499.73821	4		20 21 54.297	.000		−20 03 56.02	+0.42	4.102334
61 07 27.21	7507.71343	8		20 17 39.249	+.011		−20 19 06.11	+0.33	4.095186
61 07 28.21	7508.71033	2		20 17 07.208	−.021		−20 20 57.32	+0.85	4.095612
61 07 31.20	7511.70103	2		20 15 31.509	−.028		−20 26 28.82	+0.07	4.098641
61 08 05.18	7516.68557	4		20 12 54.548	+.013		−20 35 20.39	+0.26	4.109518
61 08 08.17	7519.67632	8		20 11 22.838	−.018		−20 40 23.82	+1.28	4.119514
61 08 11.16	7522.66710	2		20 09 53.775	−.034		−20 45 17.16	−0.50	4.132072
61 08 13.16	7524.66097	1		20 08 56.144	−.057		−20 48 22.24	+0.86	4.141844
61 08 14.15	7525.65792	2		20 08 27.948	−.041		−20 49 53.52	+0.24	4.147144
61 08 18.14	7529.64574	4		20 06 39.579	+.006		−20 55 37.57	+0.73	4.171041
61 08 19.14	7530.64271	2		20 06 13.693	+.014		−20 56 59.77	−0.08	4.177676
61 08 28.11	7539.61574	8		20 02 45.855	−.002		−21 07 40.26	+0.45	4.248611
61 08 30.10	7541.60983	6		20 02 06.433	−.001		−21 09 39.83	−0.19	4.266978
61 08 31.10	7542.60688	0		20 01 47.690	−.035		−21 10 35.03	+0.72	4.276497
61 09 01.10	7543.60394	4		20 01 29.697	−.005		−21 11 28.66	+0.94	4.286237
62 07 20.34	7865.84298	2		22 56 09.545	−.024		− 8 08 53.09	+0.24	4.233928
62 07 21.34	7866.84010	4		22 55 56.917	−.010		− 8 10 27.92	+1.04	4.223034
62 07 27.32	7872.82268	0		22 54 27.159	−.025		− 8 21 22.27	+1.35	4.161933
62 07 28.31	7873.81975	4		22 54 09.980	−.005		− 8 23 25.12	+0.52	4.152499
62 08 01.30	7877.80797	0		22 52 55.129	+.021		− 8 32 07.81	+0.39	4.117053
62 08 13.27	7889.77202	0		22 48			− 9 02 54.95	+0.26	4.034561
62 08 20.25	7896.75073	6		22 45			− 9 23 10.66	+0.26	4.004309
62 08 27.22	7903.72929	6		22 41 49.259	+.010		− 9 44 17.56	+0.16	3.988094
62 08 29.22	7905.72315	7		22 40 50.292	−.009		− 9 50 22.37	+0.46	3.986118
62 09 01.21	7908.71393	6		22 39 21.366	−.016		− 9 59 28.29	+0.69	3.985394

SATURN

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
57 04 21.33	5949.83460	5		16 50 05.268	−.170		−20 36 08.35	+0.63	9.258139
57 05 01.30	5959.80583	5		16 47 58.164	−.239		−20 31 53.04	+0.14	9.156623
57 05 02.30	5960.80294	5		16 47 43.844	−.221		−20 31 25.69	−0.36	9.147796
57 05 24.23	5982.73861	8		16 41 34.890	−.193		−20 20		9.021969
57 05 25.23	5983.73566	2		16 41 16.491	−.142		−20 19 28.79	−0.19	9.019519
57 05 30.22	5988.72094	1		16 39 43.300	−.182		−20 16 42.46	+0.22	9.011745
57 06 02.21	5991.71210	1		16 38 47.045	−.186		−20 15 03.37	+0.23	9.010671
57 06 11.18	6000.68559	8		16 35 59.590	−.150		−20 10 12.42	+0.88	9.023497
57 06 12.18	6001.68265	1		16 35 41.297	−.160		−20 09 42.07	+0.07	9.026392
57 06 13.17	6002.67971	3		16 35 23.131	−.143		−20 09 10.55	+0.63	9.029575

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

SATURN

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
57 06 16.17	6005.67089	1		16 34 29.204	-.178		-20 07 39.05	+1.35	9.040853
57 06 18.16	6007.66503	8		16 33 53.911	-.168		-20 06 40.89	+0.77	9.049803
57 06 20.15	6009.65916	8		16 33 19.177	-.172		-20 05 43.94	+0.42	9.059876
57 06 21.15	6010.65624	2		16 33 02.104	-.127		-20 05 15.94	+0.46	9.065334
57 06 22.15	6011.65331	3		16 32 45.171	-.113		-20 04 48.25	+0.55	9.071070
57 06 23.15	6012.65039	5		16 32 28.291	-.238		-20 04 21.68	-0.04	9.077084
57 06 27.13	6016.63871	3		16 31 23.374	-.097		-20 02 38.34	-0.06	9.103854
57 07 02.12	6021.62418	8		16 30 07.050	-.174		-20 00 40.90	+0.96	9.143270
58 05 21.28	6344.78412	2		17 34 30.573	-.168		-21 52 28.78	+0.71	9.124716
58 05 24.27	6347.77535	3		17 33 40.581	-.139		-21 52 00.84	-0.55	9.105295
58 05 27.26	6350.76656	8		17 32 48.793	-.174		-21 51 30.08	+0.28	9.088363
58 05 30.25	6353.75776	8		17 31 55.558	-.182		-21 50 59.31	+0.43	9.073979
58 05 31.25	6354.75482	6		17 31 37.595	-.125		-21 50 49.65	-0.31	9.069748
58 06 05.24	6359.74010	6		17 30 05.734	-.139		-21 49 58.07	-0.92	9.052936
58 06 07.23	6361.73421	5		17 29 28.318	-.146		-21 49 35.28	+0.87	9.048250
58 06 08.23	6362.73126	3		17 29 09.548	-.095		-21 49 22.76	+2.82	9.046345
58 06 16.20	6370.70767	2		17 26 37.703	-.170		-21 48 01.04	-0.18	9.041805
58 06 18.20	6372.70177	1		17 25 59.826	-.124		-21 47 40.19	-0.26	9.043650
58 06 19.19	6373.69882	2		17 25 40.844	-.205		-21 47 28.69	+0.92	9.045016
58 06 25.18	6379.68115	2		17 23			-21 46 28.60	+0.57	9.059421
58 06 26.17	6380.67820	1		17 23 30.445	-.183		-21 46 19.56	-0.18	9.062843
58 06 29.16	6383.66938	1		17 22 36.172	-.139		-21 45 50.78	+0.08	9.074838
58 06 30.16	6384.66645	2		17 22 18.366	-.120		-21 45 41.13	+0.58	9.079401
58 07 01.16	6385.66351	8		17 22 00.636	-.182		-21 45 32.37	+0.30	9.084243
58 07 02.16	6386.66058	6		17 21 43.214	-.078		-21 45 23.97	-0.12	9.089363
58 07 03.15	6387.65765	2		17 21 25.744	-.198		-21 45 14.55	+0.69	9.094764
59 05 25.30	6713.80925	6		18 25 36.398	-.071		-22 21 24.57	-0.38	9.198103
59 06 05.27	6724.77721	8		18 22 43.043	-.152		-22 23 26.19	+0.67	9.114872
59 06 16.24	6735.74491	2		18 19 26.424	-.164		-22 25 41.42	-0.01	9.064913
59 06 18.23	6737.73902	3		18 18 49.295	+.018		-22 26 05.61	+0.67	9.059582
59 06 19.23	6738.73607	2		18 18 30.358	-.151		-22 26 19.38	-0.65	9.057349
59 06 21.23	6740.73017	1		18 17 52.666	-.121		-22 26 43.87	-0.17	9.053766
59 06 26.21	6745.71542	2		18 16 17.606	-.169		-22 27 46.00	+0.02	9.049969
59 06 28.20	6747.70952	6		18 15 39.590	-.079		-22 28 09.89	+0.86	9.050523
59 06 29.20	6748.70657	2		18 15 20.553	-.080		-22 28 22.92	+0.07	9.051244
59 06 30.20	6749.70362	8		18 15 01.498	-.126		-22 28 35.12	+0.12	9.052260
59 07 04.19	6753.69183	6		18 13 46.090	+.006		-22 29 23.27	+0.28	9.059285
59 07 05.18	6754.68888	1		18 13 27.213	-.157		-22 29 35.80	-0.31	9.061774
59 07 08.18	6757.68005	1		18 12 31.594	-.164		-22 30 11.52	-0.52	9.071020
59 07 09.17	6758.67711	6		18 12 13.228	-.203		-22 30 22.77	-0.08	9.074681
59 07 12.16	6761.66829	2		18 11 19.072	-.158		-22 30 57.14	+0.26	9.087393
59 07 17.15	6766.65363	8		18 09 51.906	-.157		-22 31 53.72	-0.27	9.114210
59 07 18.15	6767.65071	3		18 09 35.089	-.092		-22 32 04.43	+0.06	9.120402
59 07 19.14	6768.64779	1		18 09 18.356	-.151		-22 32 15.60	-0.16	9.126854
59 07 24.13	6773.63321	8		18 07 58.222	-.130		-22 33 09.53	-0.26	9.163123
59 07 29.11	6778.61870	5		18 06 44.213	-.102		-22 34 01.04	+0.36	9.205808
59 08 01.11	6781.61004	2		18 06 03.116	-.107		-22 34 31.76	+0.09	9.234359
60 06 01.32	7086.82270	9		19 15 36.509	+.063		-21 51 47.27	+0.75	9.223636
60 06 02.31	7087.81981	8		19 15 23.291	+.025		-21 52 14.78	+0.45	9.213794
60 06 06.30	7091.80825	6		19 14 27.693	+.017		-21 54		9.176836
60 06 09.29	7094.79955	2		19 13 43.205	+.020		-21 55 38.78	+0.02	9.151719
60 06 11.29	7096.79373	6		19 13 12.326	+.031		-21 56 41.39	-0.63	9.136250
60 06 16.27	7101.77914	1		19 11 51.137	+.053		-21 59 22.08	-0.14	9.102189
60 06 17.27	7102.77621	3		19 11 34.264	+.047		-21 59 55.41	-0.35	9.096187
60 06 19.27	7104.77036	2		19 10 59.978	+.048		-22 01 01.92	+0.10	9.085013

SATURN

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
60 06 20.26	7105.76743	6		19 10 42.576	+.047		−22 01 35.33	+0.51	9.079846
60 06 26.24	7111.74980	1		19 08 55.090	+.025		−22 05 01.67	+0.71	9.054836
60 06 27.24	7112.74686	6		19 08 36.830	+.104		−22 05 36.37	+0.89	9.051680
60 06 28.24	7113.74392	8		19 08 18.350	+.060		−22 06 11.29	+0.91	9.048818
60 06 29.24	7114.74097	9		19 07 59.742	−.022		−22 06 46.81	+0.42	9.046248
60 07 02.23	7117.73214	9		19 07 03.758	+.002		−22 08 31.49	+0.92	9.040308
60 07 03.22	7118.72919	1		19 06 44.990	+.013		−22 09 07.29	+0.16	9.038918
60 07 06.22	7121.72034	9		19 05 48.516	+.054		−22 10 51.70	+0.55	9.036520
60 07 08.21	7123.71445	2		19 05 10.772	+.042		−22 12 00.66	+1.14	9.036396
60 07 09.21	7124.71150	9		19 04 51.903	+.033		−22 12 35.65	+0.80	9.036776
60 07 10.20	7125.70855	1		19 04 33.044	+.021		−22 13 10.37	+0.64	9.037452
60 07 13.19	7128.69971	9		19 03 36.662	+.020		−22 14 53.54	+0.33	9.041242
60 07 16.19	7131.69087	4		19 02 40.706	−.006		−22 16 34.90	+0.17	9.047678
60 07 20.17	7135.67910	9		19 01			−22 18 46.31	+0.50	9.060354
60 07 24.16	7139.66736	1		19 00 15.809	−.007		−22 20 53.21	+1.17	9.077658
60 07 25.16	7140.66442	9		18 59 58.325	+.021		−22 21 25.23	+0.31	9.082697
60 08 02.14	7148.64104	8		18 57 44.905	+.044		−22 25 21.49	+0.63	9.132958
60 08 03.13	7149.63813	9		18 57 29.170	+.021		−22 25 49.58	+0.40	9.140448
61 06 13.32	7463.82435	9		20 04 20.590	−.021		−20 28 25.02	+1.07	9.189623
61 06 17.31	7467.81282	9		20 03 27.646	+.004		−20 31 24.28	+0.14	9.151474
61 06 19.30	7469.80703	6		20 02 59.465	−.023		−20 32 58.11	−0.04	9.133865
61 06 28.28	7478.78086	6		20 00 40.891	+.023		−20 40 29.29	+0.24	9.067386
61 06 29.27	7479.77794	9		20 00 24.450	+.033		−20 41 21.84	+0.41	9.061332
61 06 30.27	7480.77501	8		20 00 07.771	−.010		−20 42 14.19	+1.21	9.055551
61 07 04.26	7484.76330	9		19 58 59.520	+.011		−20 45 51.23	+0.50	9.035205
61 07 08.25	7488.75157	9		19 57 48.896	+.001		−20 49 32.10	+0.32	9.019395
61 07 19.21	7499.71921	4		19 54 27.447	.000		−20 59 47.73	+0.21	9.000080
61 07 26.19	7506.69860	4		19 52 18.147	+.031		−21 06 12.95	+0.21	9.006470
61 07 27.19	7507.69566	8		19 51 59.829	+.016		−21 07 06.57	+0.58	9.008560
61 07 28.19	7508.69272	2		19 51 41.581	+.003		−21 08 00.22	+0.62	9.010943
61 08 05.16	7516.66923	4		19 49 19.093	−.018		−21 14 55.19	+0.41	9.040437
61 08 08.16	7519.66045	8		19 48 27.957	+.068		−21 17 22.08	+0.82	9.056214
61 08 11.15	7522.65168	2		19 47 38.283	+.044		−21 19 45.12	−0.15	9.074503
61 08 13.14	7524.64585	1		19 47 06.120	−.004		−21 21 15.32	+1.20	9.088064
61 08 14.14	7525.64294	2		19 46 50.412	+.025		−21 22 01.03	+0.23	9.095248
61 08 18.13	7529.63132	4		19 45 49.853	+.068		−21 24 52.08	+0.96	9.126608
61 08 19.12	7530.62842	2		19 45 35.316	+.051		−21 25 33.81	+0.29	9.135090
61 08 28.10	7539.60248	8		19 43 37.348	+.060		−21 31 07.15	+0.58	9.222300
61 08 30.09	7541.59676	6		19 43 14.480	+.067		−21 32 12.50	+0.06	9.244196
62 06 16.35	7831.85126	6		20 54 04.652	+.044		−18 05 53.21	+1.27	9.234861
62 06 22.33	7837.83417	9		20 53 02.808	+.012		−18 10		9.166455
62 07 12.27	7857.77633	6		20 48 23.313	−.023		−18 31 57.54	+0.20	8.999563
62 07 19.25	7864.75587	6		20 46 25.993	+.048		−18 40 23.79	+0.04	8.966323
62 07 20.25	7865.75294	2		20 46 08.593	−.035		−18 41 36.68	+0.90	8.962710
62 07 21.25	7866.75000	4		20 45 51.234	+.038		−18 42 51.16	+0.41	8.959385
62 07 27.23	7872.73239	0		20 44 04.667	−.054		−18 50 18.22	+0.14	8.945570
62 07 28.22	7873.72945	4		20 43 46.792	+.041		−18 51 32.74	+0.23	8.944300
62 08 03.21	7879.71182	4		20 41 58.446	+.057		−18 58 57.79	+0.71	8.942953
62 08 08.19	7884.69713	8		20 40 28.407	−.025		−19 05 01.89	+0.72	8.950035
62 08 12.18	7888.68539	1		20 39 17.634	+.039		−19 09 45.35	+0.50	8.961015
62 08 13.18	7889.68246	0		20 39 00.151	+.031		−19 10 54.85	+0.45	8.964488
62 08 15.17	7891.67660	8		20 38 25.517	+.015		−19 13 11.38	+1.02	8.972300
62 08 16.17	7892.67367	4		20 38 08.400	+.028		−19 14 19.91	+0.07	8.976636
62 08 19.16	7895.66490	1		20 37 17.846	+.045		−19 17 37.88	+0.62	8.991345
62 08 20.16	7896.66197	6		20 37 01.312	+.066		−19 18 43.10	+0.01	8.996811

SATURN

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
62 08 27.14	7903.64158		6	20 35 10.540	-.002		-19 25 50.92	+0.22	9.042790
62 08 29.13	7905.63578		7	20 34 40.824	+.013		-19 27 43.90	+1.08	9.058349

URANUS

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
56 01 19.22	5491.72829		1	8 10 52.374	-.076		+20 39 01.36	+0.63	17.604677
56 01 27.20	5499.70544		0	8 09 25.380	-.095		+20 43 31.44	+0.23	17.607532
56 01 28.20	5500.70258		4	8 09 14.648	-.028		+20 44 04.68	+0.18	17.609282
56 02 08.17	5511.67121		4	8 07 18.782	-.096		+20 49 55.74	+0.39	17.648717
56 02 10.16	5513.66552		3	8 06 58.642	-.079		+20 50 55.65	+0.05	17.659795
56 02 19.13	5522.63996		5	8 05 33.001	-.071		+20 55 07.47	+0.10	17.723728
56 02 21.13	5524.63429		8	8 05 15.296	-.097		+20 55 58.74	+0.22	17.740931
56 02 22.13	5525.63146		1	8 05 06.661	-.103		+20 56 23.07	-0.30	17.749920
56 02 23.12	5526.62863		0	8 04 58.187	-.087		+20 56 47.88	+0.12	17.759167
56 02 24.12	5527.62581		0	8 04 49.868	-.063		+20 57 12.00	+0.26	17.768662
56 02 26.12	5529.62016		5	8 04 33.574	-.108		+20 57 58.48	+0.32	17.788398
56 02 27.11	5530.61734		1	8 04 25.692	-.094		+20 58 20.51	-0.05	17.798637
56 03 01.10	5533.60888		4	8 04 02.971	-.079		+20 59 25.23	+0.65	17.830745
56 03 03.10	5535.60326		3	8 03 48.627	-.109		+21 00 04.75	+0.15	17.853290
56 03 05.09	5537.59764		8	8 03 35.014	-.104		+21 00 42.56	+0.12	17.876717
57 01 11.26	5849.76289		5	8 32 17.474	-.089		+19 30 04.31	+0.33	17.584518
57 01 17.24	5855.74579		3	8 31 14.900	-.106		+19 33 52.22	-0.31	17.562648
57 01 20.23	5858.73723		5	8 30 42.945	-.120		+19 35 48.64	+0.51	17.555854
57 02 11.17	5880.67447		2	8 26 49.765	-.054		+19 49 28.29	+0.08	17.591618
57 02 12.17	5881.67162		8	8 26 39.673	-.087		+19 50 02.69	-0.06	17.596755
57 02 14.16	5883.66593		3	8 26 19.779	-.104		+19 51 10.68	0.00	17.607891
57 02 17.15	5886.65740		5	8 25 50.678	-.064		+19 52 49.83	+0.16	17.626746
57 02 18.15	5887.65456		2	8 25 41.117	-.113		+19 53 21.62	-0.21	17.633601
57 02 21.14	5890.64605		8	8 25 13.285	-.063		+19 54 55.39	-0.06	17.655821
57 02 22.14	5891.64322		2	8 25 04.221	-.083		+19 55 25.98	+0.31	17.663769
57 02 23.14	5892.64038		3	8 24 55.319	-.054		+19 55 55.61	+0.12	17.671993
57 02 24.13	5893.63755		2	8 24 46.514	-.066		+19 56 24.41	-0.42	17.680476
57 03 04.11	5901.61495		1	8 23 41.115	-.125		+19 59 59.90	+0.18	17.757552
57 03 10.09	5907.59808		1	8 22 58.880	-.063		+20 02 16.11	+0.30	17.825294
57 03 11.09	5908.59528		5	8 22 52.389	-.117		+20 02 36.42	+0.15	17.837351
57 03 13.08	5910.58967		1	8 22 40.105	-.078		+20 03 15.94	+0.67	17.862057
57 12 22.33	6194.83396		6	8 55 05.389	-.096		+18 04 31.42	+0.55	17.736620
58 01 02.30	6205.80291		8	8 53 37.758	-.069		+18 10 46.98	+0.22	17.626680
58 01 03.30	6206.80008		2	8 53 28.936	-.087		+18 11 24.25	+0.32	17.618263
58 01 08.28	6211.78590		3	8 52 43.126	-.105		+18 14 36.73	+0.45	17.580272
58 01 11.27	6214.77737		6	8 52 14.431	-.025		+18 16 36.73	+0.68	17.560895
58 01 24.24	6227.74035		5	8 50 01.757	-.035		+18 25 38.46	-0.13	17.508063
58 01 29.22	6232.72608		6	8 49 08.706	-.089		+18 29 11.08	-0.28	17.501660
58 02 03.21	6237.71182		8	8 48 15.607	-.079		+18 32 42.64	+0.31	17.503056
58 02 05.20	6239.70611		5	8 47 54.463	-.067		+18 34 05.94	+0.05	17.505780
58 02 10.19	6244.69186		6	8 47 02.061	-.083		+18 37 31.29	+0.18	17.517981
58 02 11.18	6245.68901		8	8 46 51.728	-.069		+18 38 12.36	+1.05	17.521341
58 02 14.18	6248.68046		2	8 46 21.002	-.119		+18 40 09.71	-0.61	17.533232
58 02 25.14	6259.64920		8	8 44 34.696	-.075		+18 46 57.49	+0.80	17.599441
58 03 05.12	6267.62656		6	8 43 25.944	-.062		+18 51 14.10	+0.39	17.668504
58 03 06.12	6268.62374		3	8 43 17.937	-.094		+18 51 43.93	+0.66	17.678275
58 03 08.11	6270.61810		3	8 43 02.408	-.095		+18 52 40.95	+0.48	17.698547
58 03 09.11	6271.61528		1	8 42 54.932	-.048		+18 53 08.14	+0.13	17.709035
58 03 11.10	6273.60965		2	8 42 40.351	-.058		+18 54 01.45	+0.31	17.730716
58 03 12.10	6274.60684		6	8 42 33.314	-.059		+18 54 27.47	+0.72	17.741899

URANUS

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
58 03 13.10	6275.60403	3		8 42 26.413	-.091		+18 54 52.07	+0.48	17.753300
59 01 19.26	6587.76896	2		9 10 40.397	-.111		+17 01 05.67	+0.09	17.498085
59 01 23.25	6591.75758	1		9 10 00.367	-.128		+17 04 05.89	-0.11	17.480148
59 01 24.25	6592.75473	3		9 09 50.256	-.079		+17 04 51.41	-0.21	17.476428
59 01 25.25	6593.75188	6		9 09 40.021	-.101		+17 05 37.68	+0.24	17.473002
59 01 28.24	6596.74333	2		9 09 09.110	-.082		+17 07 55.55	+0.07	17.464576
59 02 01.23	6600.73193	1		9 08 27.384	-.090		+17 11 00.09	-0.21	17.457668
59 02 02.22	6601.72908	2		9 08 16.891	-.099		+17 11 46.17	-0.36	17.456728
59 02 03.22	6602.72623	5		9 08 06.375	-.118		+17 12 33.01	+0.23	17.456083
59 02 06.21	6605.71767	2		9 07 34.899	-.101		+17 14 50.97	+0.03	17.456062
59 02 07.21	6606.71482	1		9 07 24.402	-.101		+17 15 36.20	-0.60	17.456667
59 02 08.21	6607.71197	6		9 07 13.935	-.082		+17 16 22.79	+0.21	17.457596
59 02 12.20	6611.70057	5		9 06 32.184	-.108		+17 19 23.55	-0.13	17.464430
59 02 16.18	6615.68917	8		9 05 51.091	-.076		+17 22 20.68	-0.01	17.476178
59 02 17.18	6616.68632	6		9 05 40.933	-.086		+17 23 03.95	-0.26	17.479886
59 02 20.17	6619.67778	2		9 05 10.923	-.041		+17 25 12.37	-0.30	17.492770
59 02 22.17	6621.67210	5		9 04 51.218	-.074		+17 26 36.33	+0.10	17.502844
59 02 23.16	6622.66925	8		9 04 41.456	-.107		+17 27 17.12	-0.36	17.508309
59 02 25.16	6624.66357	2		9 04 22.307	-.062		+17 28 38.51	-0.03	17.520109
59 02 27.15	6626.65789	1		9 04 03.485	-.061		+17 29 58.20	+0.42	17.533045
59 03 01.15	6628.65222	5		9 03 45.099	-.042		+17 31 14.66	-0.17	17.547101
60 01 20.28	6953.78031	2		9 30 02.603	-.050		+15 33 36.75	+0.26	17.479150
60 01 22.27	6955.77463	6		9 29 43.608	-.037		+15 35 09.64	-0.64	17.467230
60 01 24.26	6957.76895	1		9 29 24.284	-.023		+15 36 44.72	-0.62	17.456492
60 01 26.26	6959.76326	6		9 29 04.638	-.035		+15 38 20.95	-0.56	17.446962
60 02 03.24	6967.74048	6		9 27 43.749	-.037		+15 44 53.97	-0.28	17.421090
60 02 04.23	6968.73763	8		9 27 33.451	-.044		+15 45 43.32	-0.48	17.419249
60 02 05.23	6969.73478	9		9 27 23.149	-.034		+15 46 32.37	-0.99	17.417719
60 02 08.22	6972.72623	6		9 26 52.091	-.070		+15 49 01.97	0.00	17.415001
60 02 18.19	6982.69774	1		9 25 09.062	-.016		+15 57 10.13	-0.36	17.426059
60 02 21.18	6985.68920	9		9 24 38.727	-.003		+15 59 32.02	-0.56	17.435359
60 02 24.18	6988.68066	2		9 24 08.860	-.013		+16 01 51.74	+0.05	17.447382
60 02 27.17	6991.67213	6		9 23 39.574	-.031		+16 04 07.47	+0.12	17.462087
60 02 28.16	6992.66929	1		9 23 29.960	-.040		+16 04 51.38	-0.31	17.467572
60 03 02.16	6995.66077	2		9 23 01.709	-.009		+16 07 00.82	-0.87	17.485773
60 03 07.14	7000.64660	6		9 22 16.605	-.028		+16 10 26.92	-0.42	17.521714
60 03 09.14	7002.64094	2		9 21 59.365	-.037		+16 11 45.20	-0.22	17.537975
60 03 11.13	7004.63529	8		9 21 42.617	-.050		+16 13 01.27	+0.29	17.555287
60 03 12.13	7005.63246	9		9 21 34.466	-.026		+16 13 37.50	-0.28	17.564325
60 03 13.12	7006.62964	1		9 21 26.433	-.017		+16 14 13.34	-0.54	17.573611
60 03 14.12	7007.62682	6		9 21 18.535	-.009		+16 14 49.02	-0.26	17.583147
61 01 04.33	7303.83664	9		9 51 16.627	-.008		+13 48 16.23	-0.18	17.622243
61 01 14.30	7313.80847	9		9 50 01.804	-.051		+13 55 03.66	-0.81	17.519256
61 02 06.24	7336.74319	6		9 46 27.122	-.023		+14 13 58.63	-0.06	17.387372
61 02 27.18	7357.68340	2		9 42 54.623	-.018		+14 32 00.81	-0.62	17.407633
61 02 28.18	7358.68056	6		9 42 44.887	-.002		+14 32 49.93	-0.31	17.411955
61 03 03.17	7361.67203	1		9 42 16.003	-.037		+14 35 13.82	-0.33	17.426689
61 03 04.16	7362.66919	9		9 42 06.587	+.012		+14 36 01.16	-0.04	17.432181
61 03 11.14	7369.64935	4		9 41 02.862	-.030		+14 41 14.88	-0.42	17.478534
61 03 12.14	7370.64652	6		9 40 54.209	-.005		+14 41 56.96	-0.85	17.486263
61 03 17.13	7375.63238	4		9 40 12.589	+.004		+14 45 21.00	+0.51	17.528876
61 03 18.12	7376.62956	9		9 40 04.634	-.006		+14 45 58.93	+0.02	17.538172
61 03 21.12	7379.62110	6		9 39 41.642	-.014		+14 47 48.98	-0.54	17.567541
61 03 26.10	7384.60704	6		9 39 06.328	-.036		+14 50 37.72	-0.12	17.621201
61 03 31.09	7389.59303	4		9 38 35.066	-.020		+14 53 05.04	-0.03	17.680310

URANUS

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
61 04 03.08	7392.58465	2		9 38 18.295	-.073		+14 54 21.47	-1.17	17.718185
62 01 13.32	7677.82508	2		10 09 06.760	-.031		+12 14 03.07	-0.23	17.547236
62 01 14.32	7678.82227	1		10 08 59.416	-.035		+12 14 45.55	-0.17	17.536836
62 01 24.29	7688.79403	6		10 07			+12 22 27.23	-0.14	17.447089
62 01 25.29	7689.79120	9		10 07 29.957	-.021		+12 23 16.59	-0.27	17.439605
62 02 05.25	7700.75998	2		10 05 47.681	-.075		+12 32 49.52	-0.07	17.376387
62 02 07.25	7702.75430	6		10 05 28.182	-.034		+12 34 37.36	-0.62	17.368789
62 02 09.24	7704.74861	2		10 05 08.441	-.028		+12 36 27.15	-0.01	17.362415
62 02 18.22	7713.72299	1		10 03 38.150	-.038		+12 44 41.22	-0.87	17.349050
62 03 02.18	7725.68884	6		10 01 38.266	-.022		+12 55 28.56	-0.55	17.370062
62 03 03.18	7726.68600	9		10 01 28.524	-.014		+12 56 21.04	-0.14	17.373789
62 03 04.18	7727.68316	1		10 01 18.811	-.033		+12 57 12.62	-0.30	17.377824
62 03 08.17	7731.67180	2		10 00 40.629	-.069		+13 00 35.74	+0.15	17.396919
62 03 09.16	7732.66896	6		10 00 31.305	-.041		+13 01 24.37	-0.68	17.402423
62 03 17.14	7740.64629	2		9 59 19.927	-.028		+13 07 39.75	-0.13	17.456611
62 03 18.14	7741.64346	1		9 59 11.496	-.009		+13 08 23.43	-0.48	17.464607
62 03 19.14	7742.64064	6		9 59 03.134	-.038		+13 09 06.66	-0.59	17.472872
62 03 23.12	7746.62934	6		9 58 31.036	-.030		+13 11 51.93	-1.45	17.508477
62 03 25.12	7748.62371	1		9 58 15.785	-.021		+13 13 11.56	-0.25	17.527775
62 03 27.11	7750.61808	8		9 58 01.090	-.022		+13 14 26.47	-0.51	17.548046
62 03 29.11	7752.61245	9		9 57 47.011	.000		+13 15 38.40	-0.39	17.569240
62 04 11.07	7765.57608	6		9 56 31.074	-.083		+13 21 57.00	-0.21	17.727856

NEPTUNE

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
56 03 27.27	5559.77949	8		13 52 53.812	-.523		- 9 40 54.44	+2.77	29.402873
56 04 01.26	5564.76551	1		13 52 25.487	-.535		- 9 38 09.48	+2.55	29.371665
57 03 30.27	5927.77769	2		14 01 10.027	-.525		-10 25 14.71	+2.13	29.402415
57 03 31.27	5928.77489	1		14 01 04.334	-.592		-10 24 41.97	+2.78	29.395752
57 04 01.27	5929.77210	2		14 00 58.752	-.494		-10 24 09.84	+2.58	29.389380
57 04 08.25	5936.75251	2		14 00 17.729	-.555		-10 20 18.79	+2.33	29.352772
57 04 15.23	5943.73291	2		13 59 35.117	-.544		-10 16 20.33	+3.55	29.330415
57 04 16.23	5944.73011	1		13 59 28.919	-.567		-10 15 46.68	+2.96	29.328389
57 04 30.19	5958.69088	8		13 58 02.038	-.550		-10 07 52.75	+2.73	29.331270
57 05 02.18	5960.68528	3		13 57 49.768	-.557		-10 06 46.43	+2.98	29.336408
57 05 03.18	5961.68247	1		13 57 43.678	-.554		-10 06 13.67	+3.01	29.339422
57 05 08.16	5966.66848	1		13 57 13.603	-.583		-10 03 34.01	+2.66	29.358800
57 05 09.16	5967.66568	3		13 57 07.675	-.599		-10 03 02.29	+3.09	29.363525
57 05 10.16	5968.66288	8		13 57 01.832	-.570		-10 02 31.82	+2.46	29.368537
57 05 17.14	5975.64331	1		13 56 22.063	-.562		- 9 59 02.68	+2.50	29.411240
57 05 24.12	5982.62377	8		13 55 44.977	-.580		- 9 55 51.74	+2.37	29.466874
57 05 25.12	5983.62098	2		13 55 39.898	-.626		- 9 55 25.15	+3.24	29.475830
57 05 26.11	5984.61819	1		13 55 34.962	-.590		- 9 54 59.82	+3.26	29.485034
57 05 29.10	5987.60983	2		13 55 20.627	-.494		- 9 53 47.31	+2.79	29.514084
57 05 30.10	5988.60705	1		13 55 15.919	-.549		- 9 53 24.18	+2.57	29.524242
57 06 02.09	5991.59870	1		13 55 02.439	-.569		- 9 52 17.49	+2.31	29.556062
58 04 02.27	6295.77592	8		14 09 28.575	-.576		-11 08 45.33	+3.56	29.400896
58 04 03.27	6296.77312	6		14 09 22.935	-.534		-11 08 12.88	+4.49	29.394409
58 04 04.27	6297.77033	1		14 09 17.168	-.578		-11 07 42.52	+3.09	29.388195
58 04 05.26	6298.76753	3		14 09 11.361	-.606		-11 07 11.36	+2.45	29.382265
58 04 13.24	6306.74514	1		14 08 23.747	-.587		-11 02 51.83	+1.24	29.345060
58 04 15.23	6308.73953	6		14 08 11.470	-.603		-11 01 41.79	+4.98	29.338666
58 04 17.23	6310.73393	3		14 07 59.152	-.572		-11 00 37.82	+2.27	29.333449
58 04 18.23	6311.73113	2		14 07 52.925	-.599		-11 00 04.10	+2.57	29.331287
58 04 26.20	6319.70871	3		14 07 02.988	-.597		-10 55 37.28	+2.70	29.324741

NEPTUNE

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
58 05 09.17	6332.67229	2		14 05 42.896	-.601		-10 48 36.80	+3.49	29.354322
58 05 10.16	6333.66949	3		14 05 36.935	-.574		-10 48 07.83	+1.49	29.358621
58 05 14.15	6337.65829	6		14 05 13.343	-.572		-10 46 05.98	+1.93	29.378609
58 05 15.15	6338.65550	1		14 05 07.497	-.618		-10 45 36.21	+2.11	29.384307
58 05 17.14	6340.64990	5		14 04 56.130	-.545		-10 44 37.79	+2.11	29.396516
58 05 22.13	6345.63593	1		14 04 28.478	-.550		-10 42 17.16	+2.93	29.431757
58 05 24.13	6347.63035	3		14 04 17.843	-.548		-10 41 24.42	+2.37	29.447692
58 05 27.12	6350.62198	8		14 04 02.375	-.546		-10 40 06.41	+3.37	29.473474
58 05 29.11	6352.61640	3		14 03 52.388	-.570		-10 39 17.08	+3.48	29.491881
58 05 30.11	6353.61362	8		14 03 47.494	-.596		-10 38 53.44	+3.11	29.501442
58 06 03.10	6357.60248	8		14 03 28.839	-.591		-10 37 23.20	+2.43	29.541998
59 03 19.32	6646.82160	6		14 19 17.132	-.634		-11 59 28.77	+2.54	29.546635
59 03 23.31	6650.81047	2		14 18 58.499	-.570		-11 57 43.40	+2.98	29.505022
59 03 24.30	6651.80768	8		14 18 53.572	-.614		-11 57 16.11	+3.10	29.495235
59 03 25.30	6652.80489	6		14 18 48.620	-.608		-11 56 48.62	+3.05	29.485686
59 03 29.29	6656.79373	6		14 18 28.060	-.614		-11 54 55.44	+2.82	29.450057
59 04 05.27	6663.77417	2		14 17 49.545	-.616		-11 51 26.22	+3.11	29.397896
59 04 07.26	6665.76858	1		14 17 38.009	-.618		-11 50 24.48	+2.85	29.385483
59 04 15.24	6673.74619	2		14 16 50.221	-.612		-11 46 10.44	+2.79	29.347259
59 04 16.24	6674.74338	1		14 16 44.098	-.610		-11 45 38.49	+2.52	29.343792
59 04 17.24	6675.74058	8		14 16			-11 45 05.68	+2.92	29.340621
59 04 18.23	6676.73778	6		14 16 31.738	-.643		-11 44 33.00	+3.22	29.337741
59 04 24.22	6682.72097	8		14 15 54.332	-.608		-11 41 17.41	+3.50	29.326638
59 04 25.21	6683.71816	2		14 15 48.012	-.657		-11 40 45.83	+2.51	29.325816
59 05 05.19	6693.69014	2		14 14 45.422	-.598		-11 35 23.41	+3.47	29.333888
59 05 06.18	6694.68733	5		14 14 39.261	-.547		-11 34 53.16	+2.22	29.336309
59 05 07.18	6695.68453	3		14 14 33.058	-.571		-11 34 21.60	+2.36	29.339035
59 05 12.17	6700.67053	6		14 14 02.587	-.553		-11 31 48.35	+1.94	29.356982
59 05 20.14	6708.64815	8		14 13 15.684	-.621		-11 27 54.12	+3.20	29.400355
59 05 25.13	6713.63417	6		14 12 48.111	-.593		-11 25 38.40	+3.66	29.436199
59 06 20.06	6739.56187	6		14 10 54.717	-.593		-11 16 51.93	+3.07	29.717804
60 03 16.33	7009.83380	3		14 28 03.306	-.182		-12 43 03.03	+1.20	29.596673
60 03 21.31	7014.81989	6		14 27 41.600	-.151		-12 41 02.73	+1.25	29.539995
60 03 23.31	7016.81433	2		14 27 32.283	-.147		-12 40 12.08	+1.11	29.518956
60 04 02.28	7026.78643	6		14 26 40.917	-.153		-12 35 37.53	+1.07	29.428817
60 04 10.26	7034.76406	1		14 25 55.251	-.169		-12 31 39.53	+0.73	29.376029
60 04 11.26	7035.76126	6		14 25 49.371	-.118		-12 31 09.03	+0.54	29.370687
60 04 13.25	7037.75566	2		14 25 37.367	-.141		-12 30 06.14	+1.63	29.360854
60 04 14.25	7038.75286	9		14 25 31.373	-.091		-12 29 36.17	+0.50	29.356370
60 04 19.23	7043.73885	8		14 25 00.643	-.137		-12 26 58.32	+1.58	29.338300
60 04 20.23	7044.73605	9		14 24 54.450	-.108		-12 26 26.84	+1.48	29.335558
60 04 23.22	7047.72764	6		14 24 35.604	-.160		-12 24 52.24	+1.02	29.329115
60 04 26.21	7050.71923	2		14 24 16.662	-.184		-12 23 16.91	+1.11	29.325346
60 04 29.21	7053.71082	9		14 23 57.754	-.135		-12 21 42.17	+0.93	29.324261
60 05 02.20	7056.70241	2		14 23 38.778	-.177		-12 20 08.06	+0.79	29.325851
60 05 03.19	7057.69961	9		14 23 32.508	-.149		-12 19 36.66	+0.97	29.326967
60 05 05.19	7059.69401	6		14 23 19.899	-.195		-12 18 34.90	+0.62	29.330096
60 05 06.19	7060.69120	2		14 23 13.720	-.114		-12 18 04.71	-0.05	29.332096
60 05 07.18	7061.68840	9		14 23 07.400	-.191		-12 17 33.51	+0.43	29.334386
60 05 16.16	7070.66319	6		14 22 12.558	-.104		-12 13 04.53	+1.55	29.367915
60 05 17.16	7071.66039	3		14 22 06.604	-.127		-12 12 35.81	+1.67	29.373054
60 05 20.15	7074.65200	9		14 21 49.044	-.144		-12 11 11.53	+1.77	29.390117
60 05 25.13	7079.63802	2		14 21 20.843	-.124		-12 08 57.71	+1.30	29.423988
60 06 02.11	7087.61570	8		14 20 38.965	-.121		-12 05 42.12	+1.29	29.491634
60 06 05.10	7090.60734	9		14 20 24.408	-.157		-12 04 35.73	+1.10	29.521011

NEPTUNE

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
60 06 06.10	7091.60455	6		14 20 19.742	-.143		-12 04 14.91	+0.61	29.531265
60 06 09.09	7094.59620	2		14 20 06.175	-.187		-12 03 13.08	+1.36	29.563362
60 06 10.09	7095.59342	5		14 20 01.901	-.130		-12 02 53.96	+1.12	29.574492
60 06 11.09	7096.59064	6		14 19 57.670	-.119		-12 02 35.38	+0.84	29.585839
61 03 18.33	7376.83490	9		14 36 34.617	-.171		-13 23 57.59	+0.62	29.599919
61 03 20.32	7378.82935	2		14 36 26.234	-.146		-13 23 11.18	+1.64	29.576385
61 04 03.29	7392.79033	2		14 35 17.792	-.146		-13 17 14.49	+0.52	29.438312
61 04 12.26	7401.76517	6		14 34 26.685	-.129		-13 12		29.376465
61 04 17.25	7406.75117	2		14 33 56.446	-.214		-13 10 24.75	+1.32	29.351937
61 04 19.24	7408.74556	6		14 33 44.159	-.198		-13 09 23.65	+1.53	29.344166
61 04 21.23	7410.73996	3		14 33 31.795	-.148		-13 08 23.27	+0.73	29.337557
61 04 27.22	7416.72314	4		14 32 54.044	-.144		-13 05 18.47	+1.00	29.324803
61 04 30.21	7419.71473	6		14 32 34.944	-.201		-13 03 46.40	+0.73	29.322405
61 05 03.20	7422.70632	6		14 32 15.934	-.168		-13 02 14.25	+0.97	29.322653
61 05 04.20	7423.70352	9		14 32			-13 01 44.19	+0.59	29.323332
61 05 05.20	7424.70071	4		14 32 03.266	-.169		-13 01 13.64	+0.78	29.324297
61 05 15.17	7434.67269	2		14 31 00.834	-.130		-12 56 16.95	+1.12	29.350023
61 05 17.16	7436.66709	6		14 30 48.656	-.147		-12 55 19.21	+1.84	29.358635
61 05 18.16	7437.66429	4		14 30 42.712	-.067		-12 54 52.20	+0.70	29.363369
61 05 22.15	7441.65309	2		14 30 18.948	-.158		-12 53 01.41	+1.56	29.385074
61 05 23.15	7442.65029	9		14 30 13.148	-.153		-12 52 35.82	+0.35	29.391189
61 05 24.14	7443.64750	6		14 30 07.399	-.148		-12 52 08.72	+0.95	29.397570
61 05 25.14	7444.64470	4		14 30 01.681	-.166		-12 51 43.18	+0.28	29.404211
61 05 26.14	7445.64190	8		14 29 56.027	-.174		-12 51 16.76	+0.83	29.411130
61 05 29.13	7448.63352	2		14 29 39.462	-.165		-12 50 00.69	+1.27	29.433434
61 05 31.12	7450.62794	6		14 29 28.777	-.126		-12 49 13.20	+0.19	29.449576
61 06 05.11	7455.61399	6		14 29 03.142	-.151		-12 47 17.80	+1.04	29.494280
61 06 17.08	7467.58061	9		14 28 09.793	-.170		-12 43 27.21	+0.90	29.625083
61 06 19.07	7469.57506	6		14 28 02.229	-.121		-12 42 54.76	+1.76	29.649815
62 03 25.32	7748.82213	1		14 44 46.555	-.221		-14 01 52.54	+0.69	29.544960
62 03 29.31	7752.81099	9		14 44 27.702	-.181		-14 00 16.68	+0.36	29.503030
62 04 15.26	7769.76350	1		14 42 54.282	-.231		-13 52 36.36	+1.02	29.370729
62 04 16.26	7770.76070	2		14 42 48.321	-.188		-13 52 07.40	+1.07	29.365418
62 04 17.25	7771.75790	8		14 42 42.279	-.183		-13 51 38.33	+1.08	29.360386
62 04 21.24	7775.74669	9		14 42 17.735	-.174		-13 49 40.93	+1.00	29.343146
62 04 22.24	7776.74389	6		14 42 11.527	-.166		-13 49		29.339548
62 04 27.22	7781.72988	6		14 41 40.055	-.212		-13 46 43.80	-0.15	29.325975
62 04 28.22	7782.72707	9		14 41 33.719	-.202		-13 46 12.90	+0.93	29.324138
62 04 29.22	7783.72427	1		14 41 27.393	-.166		-13 45 43.48	+0.52	29.322600
62 05 04.21	7788.71025	1		14 40 55.435	-.174		-13 43 13.63	+1.25	29.319353
62 05 05.20	7789.70745	2		14 40 49.033	-.185		-13 42 43.79	+1.39	29.319595
62 05 06.20	7790.70464	9		14 40 42.669	-.164		-13 42 13.67	+1.90	29.320136
62 05 08.19	7792.69903	8		14 40 29.937	-.154		-13 41 15.31	+1.39	29.322099
62 05 10.19	7794.69343	6		14 40 17.185	-.209		-13 40 17.00	+1.28	29.325247
62 05 18.17	7802.67101	8		14 39 27.239	-.162		-13 36		29.349419
62 05 20.16	7804.66540	1		14 39			-13 35 34.65	+0.87	29.358320
62 05 21.16	7805.66260	6		14 39 08.954	-.227		-13 35 07.24	+1.16	29.363182
62 05 23.15	7807.65700	8		14 38 57.080	-.165		-13 34 14.78	+0.16	29.373741
62 06 01.13	7816.63184	2		14 38 05.779	-.180		-13 30 27.74	+0.72	29.434639
62 06 02.12	7817.62905	9		14 38 00.402	-.157		-13 30 04.21	+0.70	29.442721
62 06 10.10	7825.60673	1		14 37 19.762	-.178		-13 27 09.71	+1.00	29.516254
62 06 16.09	7831.59004	6		14 36 52.634	-.199		-13 25 16.94	+0.76	29.581093
62 06 17.08	7832.58726	1		14 36 48.449	-.183		-13 24 59.02	+1.49	29.592649
62 06 23.07	7838.57061	1		14 36 25.246	-.171		-13 23 26.54	+1.25	29.666158

CERES

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
56 10 06.22	5752.72484	8		1 14 54.961	-.059		- 8 03 54.09	+0.22	1.941716
56 10 10.21	5756.71156	3		1 11 29.992	-.037		- 8 19 07.57	+1.06	1.941683
56 10 11.20	5757.70823	8		1 10 38.419	-.080		- 8 22 36.24	+0.76	1.942374
56 10 12.20	5758.70491	2		1 09 46.912	-.052		- 8 25 54.98	+1.72	1.943344
56 10 13.20	5759.70158	5		1 08 55.437	-.038		- 8 29 06.11	+1.52	1.944592
56 10 14.19	5760.69826	1		1 08 03.993	-.107		- 8 32 08.64	+0.83	1.946116
56 10 15.19	5761.69494	3		1 07 12.772	-.103		- 8 35 00.56	+1.35	1.947917
56 10 16.19	5762.69162	8		1 06 21.797	-.069		- 8 37 43.18	+1.54	1.949992
56 11 06.12	5783.62347	2		0 50 45.675	-.070		- 8 53 32.88	+0.73	2.053560
56 11 10.11	5787.61104	2		0 48 34.921	-.032		- 8 47 10.06	+0.29	2.085089
56 11 11.10	5788.60797	1		0 48 05.302	-.041		- 8 45 06.42	+0.41	2.093481
56 11 13.10	5790.60187	8		0 47 09.958	+.001		- 8 40 26.09	+1.16	2.110849
56 11 15.09	5792.59583	2		0 46 19.730	-.051		- 8 35 03.71	+1.29	2.128962
56 11 19.08	5796.58393	3		0 44 55.474	-.036		- 8 22 15.70	+0.94	2.167294
56 11 20.08	5797.58100	5		0 44 37.801	-.040		- 8 18 38.54	+0.99	2.177292
56 11 23.07	5800.57229	8		0 43 52.998	-.047		- 8 06 50.00	+0.39	2.208218
56 11 24.06	5801.56942	1		0 43 40.854	-.006		- 8 02 34.48	+0.77	2.218825
56 11 25.06	5802.56657	5		0 43 30.036	-.027		- 7 58 10.20	+0.68	2.229574
56 11 28.05	5805.55810	8		0 43 05.919	-.049		- 7 44 03.50	+0.51	2.262634
56 11 30.05	5807.55253	1		0 42 56.799	-.053		- 7 33 55.14	+0.87	2.285312
56 12 01.04	5808.54977	8		0 42 54.353	-.028		- 7 28 38.81	+0.65	2.296829
56 12 04.04	5811.54159	1		0 42 55.186	-.044		- 7 12 00.56	+0.67	2.332038
56 12 11.02	5818.52304	8		0 43 44.489	-.028		- 6 28 49.36	+0.53	2.417485
57 01 01.96	5840.46927	8		0 52 50.054	-.018		- 3 41 37.43	+0.46	2.703269
57 10 22.45	6133.95696	8		7 52 12.223	-.154		+23 37 31.61	-1.44	2.397872
57 10 23.45	6134.95489	1		7 53 09.014	-.206		+23 38 46.63	-0.55	2.384043
57 10 28.44	6139.94433	2		7 57 36.654	-.237		+23 46 01.25	-1.50	2.315196
57 10 29.44	6140.94217	8		7 58 26.755	-.235		+23 47 43.44	-0.39	2.301508
57 11 07.42	6149.92216	5		8 05 02.155	-.236		+24 06 51.65	-0.44	2.180185
57 11 11.41	6153.91287	5		8 07 23.601	-.213		+24 17 54.71	-0.62	2.127698
57 11 12.41	6154.91051	2		8 07 55.387	-.243		+24 20 57.44	+0.09	2.114750
57 11 13.40	6155.90813	1		8 08 25.744	-.246		+24 24 05.36	-0.73	2.101878
57 11 27.37	6169.87290	8		8 12 45.188	-.295		+25 20 31.38	-0.73	1.931887
57 12 22.30	6194.80017	6		8 06 17.972	-.340		+27 55 32.57	-0.60	1.703063
57 12 23.29	6195.79700	5		8 05 39.608	-.303		+28 02 43.54	-0.85	1.696635
57 12 24.29	6196.79380	8		8 04 59.585	-.328		+28 09 56.56	-0.75	1.690454
58 01 02.26	6205.76433	8		7 57 55.025	-.392		+29 14 58.42	-1.30	1.646445
58 01 03.26	6206.76098	2		7 57			+29 22 04.05	-1.88	1.642892
58 01 04.25	6207.75763	5		7 56 07.237	-.386		+29 29 07.63	-1.51	1.639615
58 01 05.25	6208.75426	1		7 55 11.858	-.396		+29 36 07.33	-1.52	1.636612
58 01 06.25	6209.75088	6		7 54 15.599	-.378		+29 43		1.633889
58 01 08.24	6211.74409	3		7 52 20.553	-.427		+29 56 40.06	-2.88	1.629280
58 01 11.23	6214.73385	6		7 49 23.052	-.393		+30 16 29.37	-1.25	1.624478
58 01 24.18	6227.68925	5		7 36 14.414	-.365		+31 29 20.46	-1.35	1.633233
58 01 31.16	6234.66561	2		7 29 42.533	-.351		+31 57 40.05	-1.93	1.657247
58 02 02.15	6236.65897	1		7 28 00.014	-.354		+32 04 15.09	-1.77	1.666424
58 02 03.15	6237.65567	8		7 27 10.637	-.369		+32 07 17.37	-1.93	1.671381
58 02 05.14	6239.64911	5		7 25 36.005	-.353		+32 12 53.21	-1.11	1.682014
58 02 10.13	6244.63303	6		7 22 05.475	-.387		+32 23 59.92	-2.34	1.712628
58 02 12.12	6246.62673	1		7 20 52.760	-.324		+32 27 22.00	-1.68	1.726410
58 02 25.08	6259.58786	8		7 16 00.209	-.298		+32 35 33.87	-1.39	1.834692
58 03 05.06	6267.56583	6		7 15 44.446	-.292		+32 30 42.96	-1.65	1.914484
58 03 06.06	6268.56318	3		7 15 51.222	-.267		+32 29 39.98	-2.16	1.925016
58 03 08.05	6270.55794	3		7 16 10.351	-.304		+32 27 18.80	-2.07	1.946406
58 03 09.05	6271.55535	1		7 16 22.759	-.278		+32 26 00.60	-1.85	1.957258

CERES

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
58 03 11.05	6273.55024	2		7 16 53.114	-.252		+32 23 09.32	-1.07	1.979260
58 03 12.04	6274.54772	6		7 17 11.037	-.229		+32 21 35.63	-1.43	1.990402
58 03 13.04	6275.54522	3		7 17 30.696	-.281		+32 19 57.42	-1.54	2.001634
58 04 01.99	6295.49917	8		7 29 52.367	-.195		+31 32 14.58	-1.63	2.239596
59 01 28.49	6596.99754	2		15 16 12.931	+.006		- 9 19 26.07	-0.43	2.642549
59 02 02.48	6601.98772	2		15 21 45.029	-.062		- 9 36 19.79	-0.29	2.580425
59 02 03.48	6602.98573	5		15 22 49.053	-.031		- 9 39 26.97	-0.26	2.567922
59 02 07.47	6606.97766	1		15 26 56.264	-.010		- 9 51 04.31	-0.72	2.517712
59 02 12.46	6611.96734	5		15 31 44.222	-.020		-10 03 39.48	-0.36	2.454705
59 02 16.45	6615.95887	8		15 35 16.577	-.003		-10 12 13.65	-0.40	2.404303
59 02 22.44	6621.94578	5		15 40 02.639	-.003		-10 22 40.52	-1.08	2.329088
59 03 03.42	6630.92524	8		15 45 51.438	-.012		-10 33 07.60	-0.25	2.218194
59 03 05.42	6632.92051	6		15 46 54.729	+.019		-10 34 38.53	+0.25	2.194035
59 03 18.38	6645.88814	1		15 51 25.674	-.026		-10 38 10.04	-0.45	2.043986
59 03 19.38	6646.88553	6		15 51 35.956	-.025		-10 38 01.60	-0.49	2.033084
59 03 23.37	6650.87490	2		15 52 01.369	-.004		-10 36 56.26	+0.10	1.990603
59 03 24.37	6651.87220	8		15 52 03.728	-.019		-10 36 33.09	-0.21	1.980283
59 03 25.36	6652.86947	6		15 52 04.580	+.068		-10 36 07.38	-0.60	1.970089
59 03 29.35	6656.85840	6		15 51 51.444	-.015		-10 33 57.00	-0.22	1.930668
59 04 05.33	6663.83830	2		15 50 25.775	-.010		-10 28 47.11	-0.16	1.867457
59 04 07.33	6665.83239	1		15 49 46.667	-.022		-10 27 03.68	-0.35	1.850922
59 04 08.32	6666.82940	6		15 49 24.732	-.020		-10 26 09.60	+0.06	1.842930
59 04 09.32	6667.82640	3		15 49 01.174	-.070		-10 25 14.87	-0.03	1.835126
59 04 15.30	6673.80802	2		15 46 08.250	-.033		-10 19 31.80	-0.59	1.792508
59 04 16.30	6674.80490	1		15 45 34.322	-.038		-10 18 32.94	-0.14	1.786141
59 04 17.30	6675.80176	8		15 44 59.054	.000		-10 17 34.94	-0.46	1.779992
59 04 18.29	6676.79861	6		15 44 22.398	+.002		-10 16 36.59	-0.27	1.774065
59 04 24.27	6682.77939	8		15 40 16.042	-.039		-10 10 59.61	-0.14	1.743348
59 04 25.27	6683.77613	2		15 39 30.910	-.070		-10 10 06.35	+0.39	1.739061
59 05 02.25	6690.75307	2		15 33 48.414	+.002		-10 04 44.78	-0.21	1.716071
59 05 05.24	6693.74305	2		15 31 09.962	-.019		-10 02 59.81	+0.37	1.710117
59 05 06.23	6694.73969	5		15 30 16.063	+.016		-10 02 31.11	-0.01	1.708667
59 05 07.23	6695.73634	3		15 29 21.666	+.010		-10 02 05.73	-0.63	1.707487
59 05 09.22	6697.72961	6		15 27 31.716	-.028		-10 01 23.78	-0.67	1.705940
59 05 12.21	6700.71949	6		15 24 45.015	+.011		-10 00 48.22	-0.89	1.705667
59 05 18.19	6706.69925	6		15 19 11.137	-.023		-10 01 28.63	-0.71	1.712478
59 05 20.19	6708.69253	8		15 17 21.553	-.036		-10 02 18.20	0.00	1.716907
59 05 22.18	6710.68582	8		15 15 33.621	-.046		-10 03 28.71	-0.49	1.722400
59 05 25.17	6713.67581	6		15 12 55.747	-.039		-10 05 53.01	-0.86	1.732605
59 06 04.14	6723.64302	3		15 05 00.198	-.034		-10 19 49.88	-0.75	1.783096
59 06 05.13	6724.63980	8		15 04 18.170	.000		-10 21 44.39	+0.09	1.789482
59 06 08.13	6727.63023	5		15 02 19.030	-.032		-10 28 05.66	+0.53	1.810010
59 06 16.10	6735.60538	2		14 57 58.587	-.026		-10 49 23.97	+0.04	1.874189
59 06 20.09	6739.59335	6		14 56 21.987	+.007		-11 02 21.63	+0.02	1.911168
59 06 21.09	6740.59038	1		14 56 01.407	-.045		-11 05 49.99	-0.01	1.919671
59 06 28.07	6747.57008	6		14 54 18.745	-.024		-11 32 37.98	-0.44	1.992606
59 07 04.05	6753.55335	6		14 53 48.311	-.028		-11 58 50.11	+0.81	2.060077
59 07 05.05	6754.55062	1		14 53 48.390	-.039		-12 03 29.88	-0.27	2.071778
59 07 08.04	6757.54253	1		14 53 57.427	+.010		-12 17 51.77	+0.38	2.107583
60 06 27.38	7112.88060	6		22 21 43.892	+.083		-22 09 59.57	+2.25	2.257201
60 06 28.37	7113.87789	8		22 21 45.282	+.030		-22 15 03.90	+1.85	2.246861
60 07 08.34	7123.84985	2		22 20 41.996	+.076		-23 12 03.99	+1.30	2.152057
60 07 25.29	7140.79850	9		22 13 34.373	+.058		-25 07 57.13	+1.29	2.034527
60 08 27.19	7173.69008	4		21 47 07.415	+.080		-28 26 42.25	+0.36	2.011317
60 09 03.16	7180.66704	6		21 41 26.880	+.055		-28 49 00.56	+1.65	2.043666

CERES

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
60 09 08.15	7185.65085	8		21 37 47.308	+.073		−28 59 17.87	+2.59	2.074121
60 09 09.14	7186.64765	4		21 37 06.317	+.083		−29 00 47.83	+2.35	2.080910
60 09 14.13	7191.63182	6		21 33 58.101	+.099		−29 05 28.56	+1.79	2.118190
60 09 17.12	7194.62250	1		21 32 19.705	+.065		−29 06 04.96	+1.62	2.143109
60 09 27.09	7204.59244	2		21 28			−28 56 53.41	+1.50	2.238544
60 10 02.07	7209.57804	1		21 27 16.377	+.060		−28 46 23.47	+0.89	2.292462
60 10 08.06	7215.56133	2		21 26 47.957	+.019		−28 29 11.25	+1.86	2.361668
60 10 11.05	7218.55320	8		21 26 53.686	+.081		−28 18 53.18	+1.35	2.397881
60 11 01.99	7240.49799	4		21 33 53.872	+.048		−26 34 23.60	+1.69	2.685827
60 11 03.99	7242.49331	8		21 35 02.059	+.055		−26 22 46.82	+1.44	2.713173
60 11 13.97	7252.47067	2		21 41 46.533	+.128		−25 20		2.850756
60 11 17.96	7256.46193	4		21 44 55.457	+.009		−24 53 28.87	+1.69	2.905779
61 09 03.41	7545.91740	6		3 41 59.769	−.109		+10 30 52.45	−0.35	2.422000
61 09 12.39	7554.89517	1		3 45 22.934	−.113		+10 33 20.58	+0.06	2.302673
61 09 13.39	7555.89263	2		3 45 38.927	−.108		+10 33 17.99	+0.20	2.289773
61 09 16.38	7558.88489	2		3 46			+10 32 47.33	−0.32	2.251602
61 09 17.38	7559.88228	1		3 46 29.059	−.111		+10 32 30.13	−0.40	2.239068
61 09 23.36	7565.86627	9		3 47 01.374	−.129		+10 29 38.22	−0.29	2.166109
61 09 24.36	7566.86355	1		3 47 01.579	−.163		+10 28 57.75	−1.10	2.154359
61 09 25.36	7567.86080	6		3 47 00.336	−.147		+10 28 15.70	−0.43	2.142734
61 09 27.35	7569.85526	2		3 46 53.294	−.149		+10 26 41.58	−0.67	2.119881
61 09 28.35	7570.85246	8		3 46 47.523	−.119		+10 25 50.85	−0.25	2.108660
61 09 30.34	7572.84682	2		3 46 31.300	−.141		+10 23 59.59	−1.10	2.086649
61 10 05.33	7577.83238	8		3 45 23.630	−.160		+10 18 42.65	+0.23	2.034355
61 10 06.32	7578.82944	6		3 45 05.489	−.108		+10 17 32.49	+0.34	2.024401
61 10 11.31	7583.81447	2		3 43 11.410	−.136		+10 11 12.76	−1.31	1.977413
61 10 12.31	7584.81143	8		3 42 44.057	−.150		+10 09 53.60	−0.33	1.968604
61 10 13.30	7585.80836	6		3 42 15.217	−.160		+10 08 32.23	−0.40	1.960002
61 10 14.30	7586.80528	9		3 41 44.908	−.182		+10 07 10.57	+0.31	1.951611
61 10 17.29	7589.79595	8		3 40 05.551	−.140		+10 02 57.87	−0.45	1.927742
61 10 18.29	7590.79280	6		3 39 29.610	−.174		+10 01 32.39	−0.91	1.920235
61 10 19.28	7591.78964	8		3 38 52.371	−.169		+10 00 07.30	−0.67	1.912957
61 10 23.27	7595.77685	2		3 36 10.513	−.190		+ 9 54 25.75	−0.32	1.886218
61 10 24.27	7596.77362	8		3 35 27.017	−.174		+ 9 53 01.06	−0.23	1.880142
61 10 25.27	7597.77037	6		3 34 42.365	−.168		+ 9 51 36.75	−0.39	1.874317
61 10 27.26	7599.76384	2		3 33 09.741	−.166		+ 9 48 51.03	−0.23	1.863430
61 10 28.26	7600.76056	9		3 32 21.846	−.178		+ 9 47 29.66	−0.16	1.858376
61 10 30.25	7602.75396	6		3 30 43.121	−.185		+ 9 44 50.42	−0.60	1.849059
61 11 01.24	7604.74732	2		3 29 00.770	−.220		+ 9 42 17.87	−0.68	1.840819
61 11 08.22	7611.72381	6		3 22 40.391	−.145		+ 9 34 35.54	−0.68	1.820765
61 11 10.21	7613.71705	2		3 20 47.249	−.195		+ 9 32		1.817610
61 11 12.21	7615.71027	6		3 18 53.122	−.183		+ 9 31 18.95	−1.11	1.815616
61 11 19.18	7622.68654	6		3 12 13.032	−.176		+ 9 28 17.37	−0.91	1.817784
61 11 21.17	7624.67978	1		3 10 20.622	−.196		+ 9 28 09.19	−0.84	1.820990
61 11 22.17	7625.67641	1		3 09 25.082	−.165		+ 9 28 12.91	−1.10	1.823019
61 11 25.16	7628.66633	9		3 06 41.534	−.169		+ 9 28 58.52	−0.86	1.830785
61 11 26.16	7629.66298	1		3 05 48.246	−.180		+ 9 29 24.92	−1.16	1.833929
61 12 01.14	7634.64639	3		3 01 33.631	−.184		+ 9 33 10.59	+0.18	1.853718
61 12 02.14	7635.64310	6		3 00 45.441	−.158		+ 9 34 13.35	−0.68	1.858474
61 12 04.13	7637.63657	2		2 59 12.107	−.158		+ 9 36 40.44	−0.24	1.868758
61 12 06.13	7639.63008	6		2 57 43.229	−.162		+ 9 39 33.26	−0.55	1.880054
61 12 14.10	7647.60472	8		2 52 38.444	−.133		+ 9 55 36.03	−0.53	1.934741
61 12 16.09	7649.59854	6		2 51 36.139	−.150		+10 00 44.19	−1.01	1.950612
61 12 23.07	7656.57746	9		2 48 45.527	−.163		+10 22 14.99	−0.68	2.012266
61 12 25.07	7658.57159	6		2 48 10.682	−.155		+10 29 21.80	−0.76	2.031477

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

CERES

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
62 01 04.04	7668.54336	2		2 46 50.722	-.121		+11 10 58.98	-0.23	2.136552
62 01 08.03	7672.53258	9		2 47 02.727	-.101		+11 30 14.62	-0.97	2.182137
62 01 11.02	7675.52468	8		2 47 27.874	-.119		+11 45 35.59	-1.08	2.217388
62 01 13.01	7677.51950	2		2 47 52.201	-.106		+11 56 13.83	-0.90	2.241328
62 01 14.01	7678.51694	1		2 48 06.557	-.140		+12 01 39.77	-0.90	2.253415
62 01 15.01	7679.51439	9		2 48 22.423	-.116		+12 07 10.04	-0.86	2.265576
62 01 16.01	7680.51186	6		2 48 39.729	-.115		+12 12 43.97	-1.63	2.277807
62 01 17.00	7681.50934	1		2 48 58.460	-.122		+12 18 23.82	-0.67	2.290104
62 01 18.00	7682.50685	6		2 49 18.643	-.090		+12 24 07.33	-0.14	2.302462
62 01 23.99	7688.49219	6		2 51 48.486	-.127		+12 59 44.61	-0.52	2.377729
62 02 04.96	7700.46450	2		2 59 07.691	-.107		+14 16 36.41	-0.77	2.531813
62 02 06.96	7702.46007	6		3 00 37.737	-.076		+14 29 59.60	-0.56	2.557662
62 02 08.95	7704.45571	2		3 02 12.251	-.091		+14 43 29.22	-1.70	2.583490
62 02 10.95	7706.45139	1		3 03 51.153	-.104		+14 57 07.12	-1.38	2.609276

PALLAS

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
57 10 07.29	6118.79791	2		3 03 24.424	-.150		-17 20 20.54	-0.64	1.767846
57 10 10.28	6121.78884	5		3 02 07.832	-.188		-18 15 59.52	-0.80	1.751961
57 10 12.28	6123.78271	3		3 01 09.728	-.246		-18 52 33.55	+0.51	1.742586
57 10 13.27	6124.77962	1		3 00 38.720	-.194		-19 10 41.10	-0.90	1.738268
57 10 21.25	6132.75439	2		2 55 45.276	-.185		-21 29 01.98	+0.22	1.712619
57 11 08.19	6150.69542	8		2 41 34.430	-.212		-25 31 50.37	+0.46	1.711585
57 11 11.18	6153.68551	5		2 39 05.228	-.226		-26 00 12.09	+0.57	1.718455
57 11 12.18	6154.68221	2		2 38 15.976	-.213		-26 08 48.11	+0.65	1.721151
57 11 13.17	6155.67891	1		2 37 27.114	-.157		-26 16 58.92	+0.17	1.724045
57 11 26.13	6168.63677	2		2 27 50.909	-.174		-27 23 42.92	+1.08	1.778103
57 11 27.13	6169.63360	8		2 27 13.271	-.175		-27 25 52.83	+0.28	1.783392
57 12 02.11	6174.61800	5		2 24 24.083	-.176		-27 30 38.56	-0.26	1.811864
57 12 06.10	6178.60580	5		2 22 33.622	-.181		-27 27 34.89	+0.24	1.836829
58 01 03.02	6206.52868	2		2 21 36.131	-.119		-24 51 30.13	+0.30	2.046375
58 01 05.02	6208.52374	1		2 22 21.013	-.146		-24 33 35.23	+0.79	2.062573
58 01 10.01	6213.51169	2		2 24 40.070	-.086		-23 46 07.27	+0.63	2.103247
58 12 31.48	6568.98974	8		13 14 33.269	-.213		- 6 38 18.93	-0.62	2.254708
59 01 24.44	6592.94377	3		13 42 47.462	-.292		- 4 05 06.24	-1.43	1.985257
59 01 28.43	6596.93541	2		13 46 29.865	-.273		- 3 25 05.07	-0.89	1.941704
59 02 01.42	6600.92682	1		13 49			- 2 40 33.33	-1.55	1.899096
59 02 02.42	6601.92464	2		13 50 39.150	-.306		- 2 28 40.42	+0.13	1.888620
59 02 03.42	6602.92244	5		13 51 24.955	-.331		- 2 16 33.63	-1.75	1.878223
59 02 07.41	6606.91347	1		13 54 14.084	-.334		- 1 25 03.03	-1.04	1.837515
59 02 12.40	6611.90187	5		13 57 12.179	-.334		- 0 14 06.87	-1.27	1.788953
59 02 16.39	6615.89227	8		13 59 06.794	-.361		+ 0 47 48.67	-0.85	1.752324
59 02 22.37	6621.87732	5		14 01 10.466	-.337		+ 2 28 53.95	-1.15	1.701757
59 02 26.36	6625.86696	3		14 01 59.650	-.373		+ 3 41 23.79	-0.66	1.671370
59 03 03.35	6630.85358	8		14 02 22.884	-.391		+ 5 17 03.99	-0.24	1.637616
59 03 05.34	6632.84809	6		14 02 20.179	-.372		+ 5 56 42.05	+0.12	1.625549
59 03 18.31	6645.81051	1		13 59 19.949	-.384		+10 25 54.89	-0.85	1.569882
59 03 19.30	6646.80749	6		13 58 55.138	-.403		+10 46 56.77	-1.08	1.567366
59 03 23.29	6650.79527	2		13 57 02.124	-.412		+12 10 40.80	+0.48	1.559979
59 03 24.29	6651.79217	8		13 56 30.575	-.427		+12 31 23.74	-1.03	1.558808
59 03 25.28	6652.78907	6		13 55 57.782	-.457		+12 52 02.14	-0.63	1.557912
59 03 29.27	6656.77650	6		13 53 35.297	-.407		+14 13 11.94	-0.17	1.557077
59 04 05.25	6663.75408	2		13 48 49.055	-.451		+16 27 31.80	-0.27	1.566323
59 04 07.24	6665.74760	1		13 47 20.861	-.450		+17 03 32.81	+0.24	1.571469
59 04 08.24	6666.74436	6		13 46 36.046	-.415		+17 21 05.55	+0.49	1.574456
59 04 09.24	6667.74110	3		13 45 50.767	-.433		+17 38 18.19	+0.12	1.577717
59 04 15.22	6673.72153	2		13 41 14.219	-.471		+19 14 12.18	-0.37	1.602915

PALLAS

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
59 04 16.21	6674.71826	1		13 40 27.931	-.460		+19 28 52.45	-0.40	1.608029
59 04 17.21	6675.71500	8		13 39 41.758	-.448		+19 43 08.66	-0.78	1.613416
59 04 18.21	6676.71174	6		13 38 55.747	-.454		+19 57 01.38	-0.75	1.618952
59 04 24.19	6682.69225	8		13 34 26.701	-.424		+21 11 41.78	-0.32	1.657807
59 04 25.18	6683.68902	2		13 33 43.478	-.475		+21 22 40.74	-0.62	1.665083
59 05 02.16	6690.66665	2		13 29 01.288	-.438		+22 27 49.95	-0.82	1.722043
59 05 05.15	6693.65722	2		13 27 13.567	-.405		+22 49 32.13	-0.31	1.749483
59 05 06.15	6694.65410	5		13 26 39.709	-.415		+22 55 57.19	-0.41	1.759005
59 05 07.15	6695.65099	3		13 26 07.001	-.372		+23 01 57.53	-1.30	1.768707
59 05 08.14	6696.64789	8		13 25 35.337	-.416		+23 07 35.92	-0.41	1.778586
59 05 09.14	6697.64481	6		13 25 04.899	-.402		+23 12 49.50	-0.84	1.788637
59 05 12.13	6700.63565	6		13 23 40.845	-.360		+23 26 14.40	-0.76	1.819777
59 05 18.11	6706.61772	6		13 21 27.208	-.393		+23 43 18.16	-0.85	1.886119
59 05 20.11	6708.61187	8		13 20 53.376	-.370		+23 46 17.65	-0.52	1.909311
59 05 21.10	6709.60897	3		13 20 38.480	-.378		+23 47 18.06	-1.18	1.921091
59 05 22.10	6710.60608	8		13 20 24.961	-.374		+23 48 01.27	-0.55	1.932989
59 05 25.09	6713.59752	6		13 19 52.599	-.364		+23 48 21.38	-0.81	1.969353
59 06 04.06	6723.56999	3		13 19 33.262	-.336		+23 32 02.16	-0.66	2.096856
59 06 05.06	6724.56732	8		13 19 38.743	-.351		+23 29 04.33	-1.35	2.110055
59 06 07.06	6726.56204	6		13 19 53.689	-.361		+23 22 33.51	+0.84	2.136655
60 07 08.21	7123.71251	2		19 02 22.692	-.200		+21 47 21.58	+0.05	2.565324
60 08 02.13	7148.63144	8		18 43 53.070	-.190		+18 56 55.71	0.00	2.621279
61 07 27.34	7507.84392	8		23 26 04.260	-.125		+ 7 52 34.57	-0.59	2.511256
61 07 28.34	7508.84104	2		23 25 51.521	-.134		+ 7 47 12.86	+0.01	2.498559
61 08 08.30	7519.80853	8		23 22 17.283	-.142		+ 6 33 50.01	+0.42	2.370470
61 08 13.29	7524.79326	1		23 19 56.805	-.141		+ 5 51 40.40	+0.09	2.320404
61 08 15.28	7526.78707	8		23 18 53.685	-.146		+ 5 33 17.63	+0.16	2.302011
61 08 18.27	7529.77771	4		23 17 12.226	-.109		+ 5 04 09.10	+0.35	2.276286
61 08 19.27	7530.77457	2		23 16 36.623	-.164		+ 4 54 01.45	+0.06	2.268224
61 08 28.24	7539.74592	8		23 10 43.873	-.157		+ 3 14 26.53	-0.36	2.207911
61 08 31.23	7542.73625	0		23 08 35.646	-.135		+ 2 38 13.82	-0.68	2.192948
61 09 01.23	7543.73301	4		23 07 52.044	-.125		+ 2 25 52.97	-0.22	2.188557
61 09 04.22	7546.72329	2		23 05 39.100	-.148		+ 1 48 02.58	-0.71	2.177211
61 09 06.21	7548.71679	0		23 04 09.209	-.139		+ 1 22 16.20	+0.03	2.171191
61 09 10.20	7552.70378	9		23 01 07.959	-.133		+ 0 29 36.52	-0.81	2.162913
61 09 12.19	7554.69727	1		22 59 37.326	-.152		+ 0 02 54.03	+0.35	2.160668
61 09 13.19	7555.69402	2		22 58 52.213	-.125		- 0 10 32.42	-0.14	2.160022
61 09 14.19	7556.69077	9		22 58 07.242	-.151		- 0 24 00.30	+0.09	2.159690
61 09 16.18	7558.68428	2		22 56 38.063	-.151		- 0 51 00.55	-0.03	2.159974
61 09 17.18	7559.68104	1		22 55 53.949	-.129		- 1 04 32.24	-0.59	2.160586
61 09 22.16	7564.66491	6		22 52 19.538	-.168		- 2 11 56.54	-0.38	2.168292
61 09 24.15	7566.65851	1		22 50 57.504	-.141		- 2 38 39.74	-0.35	2.173504
61 09 26.15	7568.65213	9		22 49 37.999	-.164		- 3 05 09.05	-0.67	2.179905
61 09 27.14	7569.64895	2		22 48 59.349	-.138		- 3 18 16.79	-0.33	2.183547
61 09 29.14	7571.64262	6		22 47 44.249	-.178		- 3 44 17.95	-0.71	2.191694
61 09 30.13	7572.63947	9		22 47 07.974	-.147		- 3 57 09.34	-0.09	2.196196
61 10 01.13	7573.63633	1		22 46 32.523	-.151		- 4 09 54.93	+0.13	2.200979
61 10 02.13	7574.63321	6		22 45			- 4 22 33.90	+0.35	2.206039
61 10 05.12	7577.62388	8		22 44 19.919	-.176		- 4 59 48.95	-0.79	2.222854
61 10 06.12	7578.62080	5		22 43 49.264	-.143		- 5 11 57.79	-0.71	2.228989
61 10 07.11	7579.61773	9		22 43 19.660	-.103		- 5 23 57.47	+0.07	2.235385
61 10 11.10	7583.60556	2		22 41 32.025	-.120		- 6 10 28.64	-0.13	2.263461
61 10 12.10	7584.60255	8		22 41 07.984	-.117		- 6 21 42.12	-0.10	2.271082
61 10 13.09	7585.59956	6		22 40 45.097	-.144		- 6 32 45.98	-0.60	2.278932
61 10 17.08	7589.58772	8		22 39 25.868	-.143		- 7 15 12.56	-0.01	2.312530

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

PALLAS

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
61 10 18.08	7590.58480	6		22 39 09.125	-.193		- 7 25 21.44	+0.35	2.321452
61 10 19.08	7591.58189	8		22 38 53.791	-.090		- 7 35 19.83	+0.06	2.330571
61 10 20.07	7592.57900	3		22 38 39.630	-.104		- 7 45 06.30	+0.27	2.339884
61 10 24.06	7596.56757	8		22 37 55.790	-.129		- 8 22 17.43	0.00	2.378955
61 10 25.06	7597.56475	6		22 37 48.151	-.037		- 8 31 05.98	-0.34	2.389153
61 10 27.05	7599.55916	3		22 37 36.535	-.108		- 8 48 06.82	-0.23	2.410031
61 10 28.05	7600.55638	9		22 37 32.714	-.115		- 8 56 19.25	-0.22	2.420702
61 10 30.05	7602.55088	6		22 37 29.006	-.093		- 9 12 07.79	+0.43	2.442482
61 11 02.04	7605.54274	8		22 37 33.163	-.099		- 9 34 22.30	-0.30	2.476172
61 11 06.03	7609.53209	6		22 37 56.814	-.149		-10 01 11.90	+1.10	2.522788
61 11 08.02	7611.52685	5		22 38 16.452	-.076		-10 13 26.36	+0.71	2.546730
61 11 10.02	7613.52168	2		22 38 41.107	-.088		-10 24 53.94	+0.18	2.571040
61 11 11.01	7614.51911	9		22 38 55.349	-.065		-10 30 20.20	-0.06	2.583320
61 11 12.01	7615.51656	6		22 39 10.704	-.193		-10 35 33.94	+0.78	2.595676
61 11 18.99	7622.49909	6		22 41 33.109	-.059		-11 07 02.57	-0.88	2.683893
61 11 21.99	7625.49180	1		22 42 51.588	-.063		-11 17 47.59	-0.03	2.722374
61 11 28.97	7632.47525	2		22 46 33.087	-.066		-11 36 56.37	-0.09	2.812944
61 12 01.96	7635.46833	6		22 48 23.585	-.147		-11 42 45.41	-2.82	2.851853
61 12 03.96	7637.46378	2		22 49			-11 45 46.88	+0.02	2.877749

JUNO

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
57 09 27.40	6108.90452	8		4 57 55.059	-.012		+ 7 33 09.68	+0.26	1.415631
57 10 04.39	6115.89015	3		5 04 45.838	-.025		+ 6 29 55.00	-0.08	1.351406
57 10 05.38	6116.88802	2		5 05 37.820	-.014		+ 6 20 23.70	-1.15	1.342556
57 10 07.38	6118.88370	2		5 07 16.458	-.052		+ 6 01 04.29	-1.14	1.325114
57 10 10.37	6121.87706	5		5 09 30.927	-.044		+ 5 31 21.52	-0.89	1.299632
57 10 12.37	6123.87252	3		5 10 51.239	-.054		+ 5 11 07.69	-0.06	1.283120
57 10 13.37	6124.87022	1		5 11 28.522	-.061		+ 5 00 52.61	-0.86	1.275014
57 10 14.36	6125.86790	2		5 12 03.919	-.008		+ 4 50 33.97	-1.02	1.267009
57 10 15.36	6126.86556	8		5 12 37.250	-.047		+ 4 40 12.09	-0.58	1.259109
57 10 21.35	6132.85099	2		5 15 14.767	-.046		+ 3 36 58.23	-0.55	1.214056
57 10 22.34	6133.84848.	8		5 15 33.737	-.045		+ 3 26 19.11	-1.09	1.206965
57 10 23.34	6134.84594	1		5 15 50.566	-.070		+ 3 15 40.30	-0.84	1.200001
57 10 26.33	6137.83819	3		5 16 28.388	-.051		+ 2 43 44.62	-0.77	1.179905
57 10 28.33	6139.83290	2		5 16 42.949	-.058		+ 2 22 33.84	-0.82	1.167198
57 10 29.33	6140.83021	8		5 16 47.066	-.039		+ 2 12 02.18	-0.66	1.161059
57 11 07.30	6149.80498	5		5 15 49.922	-.081		+ 0 40 37.86	-1.17	1.112733
57 11 08.30	6150.80206	8		5 15 33.384	-.118		+ 0 31 02.55	-0.38	1.108177
57 11 11.29	6153.79316	5		5 14 32.307	-.087		+ 0 03 09.54	-0.67	1.095554
57 11 13.28	6155.78712	1		5 13 42.246	-.061		- 0 14 32.29	-0.02	1.088032
57 11 27.24	6169.74284	8		5 04 57.531	-.147		- 1 51 23.10	+0.01	1.057185
57 11 30.23	6172.73303	3		5 02 37.075	-.093		- 2 04 27.93	+0.03	1.055860
57 12 03.22	6175.72316	2		5 00 11.740	-.089		- 2 14 25.54	-0.22	1.056463
57 12 06.21	6178.71326	5		4 57 44.007	-.099		- 2 21 09.23	-0.52	1.059002
57 12 15.18	6187.68368	2		4 50 30.237	-.114		- 2 21 27.99	+0.58	1.078198
57 12 16.18	6188.68043	6		4 49 44.802	-.081		- 2 19 41.43	-0.42	1.081395
57 12 22.16	6194.66114	6		4 45			- 2 01 34.93	-0.88	1.104948
57 12 23.15	6195.65797	5		4 44 54.869	-.114		- 1 57 21.51	+0.58	1.109589
57 12 24.15	6196.65482	8		4 44 18.401	-.108		- 1 52 49.87	+0.96	1.114426
57 12 30.13	6202.63628	6		4 41 11.463	-.132		- 1 19 26.22	-0.60	1.147497
57 12 31.13	6203.63325	2		4 40 46.091	-.103		- 1 12 52.95	+0.08	1.153659
58 01 02.12	6205.62727	8		4 40 00.560	-.125		- 0 59 02.66	-0.27	1.166514
58 01 03.12	6206.62430	2		4 39 40.500	-.116		- 0 51 45.74	-0.42	1.173204
58 01 04.12	6207.62136	5		4 39 22.241	-.131		- 0 44 14.95	-0.47	1.180064
58 01 05.11	6208.61844	1		4 39			- 0 36 30.47	-0.01	1.187091
58 01 06.11	6209.61555	6		4 38 51.339	-.109		- 0 28 34.05	-0.40	1.194284

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

JUNO

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
58 01 12.09	6215.59861	5		4 38 03.838	-.103		+ 0 23 05.32	-0.39	1 240782
58 01 31.05	6234.55025	2		4 43 08.159	-.080		+ 3 35 17.30	+0.01	1.420674
58 02 05.03	6239.53878	5		4 46 17.044	-.084		+ 4 28 47.52	-0.19	1.474652
58 02 10.02	6244.52777	6		4 50 06.193	-.091		+ 5 22 09.21	+1.29	1.530832
58 02 11.02	6245.52562	8		4 50 56.636	-.081		+ 5 32 44.05	+0.08	1.542313
58 02 12.02	6246.52349	1		4 51 48.569	-.066		+ 5 43 17.70	-0.34	1.553871
58 02 14.01	6248.51928	2		4 53 36.829	-.050		+ 6 04 19.57	+0.09	1.577210
58 02 24.99	6259.49724	8		5 05 09.682	-.041		+ 7 56 06.96	+0.01	1.710215
61 07 27.36	7507.86438	8		23 55 37.342	+.139		+ 3 23 29.82	+0.19	1.651612
61 08 08.33	7519.83332	8		23 58 05.034	+.141		+ 2 42 13.37	+0.22	1.509685
61 08 13.31	7524.81966	1		23 58 04.582	+.168		+ 2 14 12.43	+0.17	1.456739
61 08 15.31	7526.81408	8		23 57 53.896	+.156		+ 2 01 09.26	+0.22	1.436747
61 08 19.30	7530.80270	2		23 57 14.768	+.172		+ 1 31 53.97	+0.80	1.398959
61 08 28.27	7539.77615	8		23 54 23.601	+.191		+ 0 11 12.99	+0.30	1.325603
61 08 30.27	7541.77009	6		23 53 30.851	+.155		- 0 09 18.73	+0.64	1.311664
61 09 01.26	7543.76396	4		23 52			- 0 30 43.06	-0.16	1.298638
61 09 03.25	7545.75778	6		23 51 31.050	+.194		- 0 52 54.62	+0.40	1.286551
61 09 06.24	7548.74842	0		23 49 49.753	+.172		- 1 27 35.34	+0.04	1.270230
61 09 10.23	7552.73579	9		23 47 22.026	+.168		- 2 15 59.32	-0.20	1.251954
61 09 12.22	7554.72943	1		23 46 03.777	+.177		- 2 40 54.79	+0.18	1.244345
61 09 13.22	7555.72624	2		23 45 23.773	+.182		- 2 53 30.70	+0.72	1.240928
61 09 14.22	7556.72304	9		23 44 43.267	+.189		- 3 06 12.15	+0.31	1.237771
61 09 16.21	7558.71663	2		23 43 21.086	+.193		- 3 31 45.58	-0.03	1.232237
61 09 17.21	7559.71342	1		23 42 39.550	+.217		- 3 44 35.96	-0.06	1.229862
61 09 22.19	7564.69735	6		23 39 09.976	+.185		- 4 48 54.58	+0.12	1.221886
61 09 23.19	7565.69414	9		23 38 28.179	+.161		- 5 01 41.79	+0.60	1.221067
61 09 24.19	7566.69093	1		23 37 46.629	+.183		- 5 14 26.57	+0.28	1.220504
61 09 25.18	7567.68772	6		23 37 05.345	+.197		- 5 27 07.05	+0.35	1.220197
61 09 27.18	7569.68132	2		23 35 43.835	+.187		- 5 52 13.22	+0.32	1.220342
61 09 29.17	7571.67494	6		23 34 24.246	+.188		- 6 16 54.41	+0.35	1.221493
61 09 30.17	7572.67176	9		23 33 45.342	+.177		- 6 29 04.29	+0.02	1.222442
61 10 01.16	7573.66859	1		23 33 07.129	+.182		- 6 41 04.81	+0.53	1.223638
61 10 05.15	7577.65600	8		23 30 42.450	+.202		- 7 27 32.23	+0.16	1.230848
61 10 07.14	7579.64977	9		23 29 35.943	+.219		- 7 49 38.49	0.00	1.235873
61 10 11.13	7583.63747	2		23 27 36.930	+.149		- 8 31 12.52	+0.21	1.248641
61 10 12.13	7584.63444	8		23 27 10.490	+.189		- 8 40 59.96	+0.63	1.252379
61 10 13.13	7585.63142	6		23 26 45.436	+.196		- 8 50 33.58	-0.39	1.256327
61 10 14.12	7586.62841	9		23 26 21.822	+.179		- 8 59 49.95	+0.21	1.260484
61 10 17.11	7589.61951	8		23 25 20.057	+.112		- 9 26 03.46	+1.11	1.274147
61 10 18.11	7590.61658	6		23 25 02.729	+.201		- 9 34 16.92	-0.60	1.279086
61 10 20.11	7592.61077	3		23 24 32.799	+.178		- 9 49 48.00	+0.70	1.289515
61 10 24.09	7596.59939	8		23 23 53.182	+.174		-10 17 25.50	+0.08	1.312456
61 10 25.09	7597.59660	6		23 23 47.573	+.147		-10 23 36.05	-0.16	1.318602
61 10 27.09	7599.59107	3		23 23 41.699	+.185		-10 35 03.03	+0.32	1.331360
61 10 28.08	7600.58834	9		23 23 41.400	+.185		-10 40 19.55	+0.92	1.337964
61 10 30.08	7602.58293	6		23 23 46.128	+.147		-10 50 01.48	-0.04	1.351603
61 11 02.07	7605.57498	8		23 24 06.757	+.183		-11 02 20.21	-0.03	1.373088
61 11 08.05	7611.55963	5		23 25 36.550	+.156		-11 19 06.06	+0.31	1.419361
61 11 10.05	7613.55468	2		23 26 20.801	+.123		-11 22 24.74	+0.21	1.435652
61 11 11.05	7614.55224	9		23 26 45.610	+.148		-11 23 38.62	+0.55	1.443941
61 11 12.04	7615.54981	6		23 27 12.198	+.191		-11 24		1.452324
61 11 16.04	7619.54032	8		23 29 15.467	+.075		-11 25 47.05	+0.60	1.486687
61 11 19.03	7622.53339	6		23 31 05.590	+.131		-11 23 57.25	+0.48	1.513244
61 11 22.02	7625.52664	1		23 33 10.082	+.162		-11 19 54.17	+0.09	1.540376
61 11 26.01	7629.51788	1		23 36 17.449	+.116		-11 11 11.65	-0.08	1.577330

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

JUNO

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
61 11 29.01	7632.51149	2		23 38 53.398	+.145		−11 02 17.85	+0.28	1.605546
61 12 01.00	7634.50731	3		23 40 44.404	+.167		−10 55 17.67	+0.40	1.624560
61 12 02.00	7635.50524	6		23 41 41.945	+.169		−10 51 29.33	−0.06	1.634121
61 12 05.99	7639.49713	6		23 45 45.305	+.087		−10 34 11.91	+1.50	1.672676
61 12 07.99	7641.49317	8		23 47 54.806	+.147		−10 24 25.01	+0.68	1.692108
61 12 08.99	7642.49120	3		23 49 01.384	+.136		−10 19 14.59	+0.40	1.701854
61 12 13.98	7647.48160	8		23 54 52.067	+.132		− 9 50 41.23	+0.66	1.750802
61 12 15.97	7649.47785	6		23 57 20.216	+.104		− 9 38 04.84	+1.16	1.770444
62 01 03.94	7668.44444	2		0 24 00.515	+.188		− 7 10 06.48	+1.03	1.956537

VESTA

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
57 08 14.38	6064.88326	8		1 33 44.811	+.052		− 0 31 12.01	+0.13	1.741450
57 08 16.37	6066.87811	5		1 34 11.837	+.012		− 0 37 13.77	+0.82	1.722574
57 08 24.35	6074.85676	5		1 34 54.242	+.050		− 1 07 38.54	+0.53	1.651485
57 08 28.34	6078.84561	1		1 34 34.510	+.041		− 1 26 25.18	+0.05	1.619059
57 09 16.28	6097.78842	2		1 26 54.733	+.009		− 3 20 09.60	−0.34	1.502676
57 09 20.27	6101.77557	2		1 24 07.809	+.009		− 3 47 07.37	−0.44	1.487672
57 09 25.25	6106.75920	3		1 20 11.819	−.001		− 4 20 48.94	+0.66	1.474331
57 09 26.25	6107.75589	1		1 19			− 4 27 28.56	+0.47	1.472415
57 09 28.24	6109.74924	5		1 17 38.401	+.033		− 4 40 37.93	+0.65	1.469355
57 10 04.22	6115.72910	3		1 12 12.859	+.014		− 5 18 15.66	+0.57	1.466449
57 10 05.22	6116.72572	2		1 11 17.002	+.037		− 5 24 10.75	+0.58	1.466889
57 10 10.20	6121.70881	5		1 06 34.746	+.020		− 5 51 48.71	+0.15	1.473088
57 10 12.20	6123.70205	3		1 04 41.836	+.017		− 6 01 48.73	+0.41	1.477431
57 10 13.19	6124.69867	1		1 03 45.677	+.036		− 6 06 33.59	+0.71	1.480000
57 10 14.19	6125.69529	2		1 02 49.790	+.047		− 6 11 08.28	+0.78	1.482834
57 10 15.19	6126.69192	8		1 01 54.217	+.040		− 6 15 32.73	+0.27	1.485931
57 10 16.18	6127.68855	1		1 00 59.049	+.026		− 6 19 45.16	+0.71	1.489292
57 10 21.17	6132.67182	2		0 56 31.730	+.051		− 6 37 53.27	+0.41	1.509995
57 10 23.16	6134.66518	1		0 54 49.969	+.056		− 6 43 41.56	+0.18	1.520067
57 10 26.15	6137.65531	3		0 52 24.430	+.042		− 6 50 45.28	+0.42	1.537035
57 10 28.14	6139.64879	2		0 50 52.788	+.031		− 6 54 21.39	+0.13	1.549551
57 10 29.14	6140.64555	8		0 50 08.710	+.007		− 6 55 47.86	+1.35	1.556160
57 10 30.14	6141.64233	5		0 49 25.971	+.085		− 6 57 02.54	+0.85	1.562998
57 11 07.11	6149.61709	5		0 44 32.015	+.057		− 6 58 52.54	+0.41	1.625519
57 11 08.11	6150.61401	8		0 44 01.730	+.003		− 6 58 05.92	+1.16	1.634255
57 11 12.10	6154.60187	2		0 42 16.230	+.054		− 6 52 55.31	−0.20	1.671081
57 11 13.09	6155.59888	1		0 41 53.759	+.061		− 6 51 05.06	+0.60	1.680740
57 11 26.06	6168.56170	2		0 39 27.996	+.020		− 6 09 39.27	+0.27	1.820711
57 11 27.05	6169.55898	8		0 39 28.118	+.035		− 6 05 12.06	+0.40	1.832442
57 11 30.05	6172.55090	3		0 39 37.903	+.044		− 5 50 52.77	+0.35	1.868318
57 12 02.04	6174.54560	6		0 39 52.091	−.039		− 5 40 33.34	+0.42	1.892765
57 12 06.03	6178.53522	5		0 40 38.772	−.001		− 5 18 09.66	+0.68	1.942795
57 12 16.01	6188.51040	6		0 44			− 4 13 11.70	−0.61	2.073264
57 12 23.99	6196.49163	8		0 48 40.772	+.009		− 3 13 20.11	+0.77	2.181555
57 12 29.97	6202.47812	6		0 52 49.325	−.007		− 2 24 44.25	+0.75	2.263994
57 12 30.97	6203.47591	2		0 53 34.562	+.047		− 2 16 22.32	+0.72	2.277784
58 01 01.97	6205.47153	8		0 55 07.960	+.015		− 1 59 26.33	+0.27	2.305383
58 01 02.96	6206.46935	2		0 55 56.185	+.021		− 1 50 52.43	0.00	2.319188
58 01 03.96	6207.46719	5		0 56 45.394	+.043		− 1 42 13.17	+1.18	2.332993
58 01 04.96	6208.46504	1		0 57 35.534	+.038		− 1 33 32.52	+0.04	2.346796
58 01 11.95	6215.45027	1		1 03 51.992	+.049		− 0 31 06.19	+0.02	2.443212
58 01 12.94	6216.44820	8		1 04 49.265	+.068		− 0 21 58.13	+0.60	2.456932
58 10 29.47	6505.97083	6		8 38 52.033	+.065		+18 30 30.83	−0.32	2.364100
58 10 30.46	6506.96880	5		8 39 52.550	+.082		+18 28 41.87	−0.33	2.350366
58 10 31.46	6507.96675	8		8 40 52.053	+.073		+18 26 56.84	−0.31	2.336625

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

VESTA

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
58 11 01.46	6508.96470	3		8 41 50.590	+.107		+18 25 15.93	-0.20	2.322880
58 11 06.45	6513.95424	3		8 46 27.335	+.028		+18 17 57.11	+0.22	2.254156
58 11 08.44	6515.94997	6		8 48 10.432	+.106		+18 15 35.27	+0.28	2.226716
58 11 10.44	6517.94564	2		8 49 48.790	+.084		+18 13 34.32	+0.04	2.199338
58 11 14.43	6521.93683	2		8 52 51.055	+.109		+18 10 41.69	+0.05	2.144871
58 11 20.42	6527.92315	2		8 56 45.866	+.101		+18 09 33.61	+0.26	2.064293
58 11 21.42	6528.92082	8		8 57 20.232	+.056		+18 09 46.30	+0.23	2.051035
58 11 22.41	6529.91847	6		8 57 53.296	+.113		+18 10 06.33	+0.31	2.037835
58 11 23.41	6530.91611	1		8 58 24.865	+.090		+18 10 33.30	-0.07	2.024696
58 11 25.41	6532.91132	8		8 59 23.721	+.075		+18 11 50.59	-0.24	1.998612
58 11 30.39	6537.89907	1		9 01 24.690	+.065		+18 17 24.69	+0.54	1.934697
58 12 02.39	6539.89404	2		9 02 02.174	+.087		+18 20 36.45	+0.40	1.909723
58 12 07.38	6544.88114	6		9 03 06.962	+.027		+18 31 10.59	-0.05	1.849043
58 12 11.37	6548.87046	6		9 03 28.019	+.087		+18 42 22.62	-0.08	1.802595
58 12 16.35	6553.85664	2		9 03 14.145	+.098		+18 59 52.18	-0.31	1.747648
58 12 17.35	6554.85382	6		9 03 05.906	+.080		+19 03 50.12	-0.24	1.737120
58 12 18.35	6555.85097	8		9 02 55.848	+.066		+19 07 57.51	+0.10	1.726756
58 12 19.34	6556.84810	3		9 02 43.988	+.081		+19 12 12.98	-0.48	1.716559
58 12 27.32	6564.82441	6		9 00 03.242	+.053		+19 51 39.34	+1.04	1.641556
59 01 03.30	6571.80258	2		8 56 08.539	+.099		+20 33 02.90	-0.26	1.586700
59 01 19.24	6587.74948	2		8 42 32.389	+.096		+22 22 23.03	-0.07	1.506878
59 01 23.23	6591.73572	1		8 38 26.932	+.145		+22 50 20.18	-0.45	1.497891
59 01 24.23	6592.73227	3		8 37 24.136	+.079		+22 57 13.46	-0.81	1.496356
59 01 25.22	6593.72881	6		8 36 21.059	+.124		+23 04 04.65	-0.06	1.495105
59 01 28.21	6596.71841	2		8 33 10.148	+.117		+23 24 12.96	-0.11	1.493068
59 02 01.20	6600.70455	1		8 28 55.152	+.117		+23 49 54.43	+0.08	1.494341
59 02 02.20	6601.70109	2		8 27 51.885	+.115		+23 56 04.57	-0.13	1.495369
59 02 03.19	6602.69763	5		8 26 48.965	+.090		+24 02 08.30	-0.03	1.496677
59 02 06.18	6605.68730	2		8 23 43.374	+.095		+24 19 36.07	+0.13	1.502277
59 02 07.18	6606.68387	1		8 22 42.852	+.122		+24 25 09.21	-0.51	1.504695
59 02 12.16	6611.66688	5		8 17 53.590	+.101		+24 50 52.36	-0.31	1.520796
59 02 16.15	6615.65352	8		8 14 22.963	+.106		+25 08 45.68	-0.33	1.538283
59 02 17.15	6616.65023	6		8 13 33.763	+.128		+25 12 51.15	-0.09	1.543263
59 02 20.14	6619.64043	2		8 11 15.170	+.074		+25 24 10.53	-0.02	1.559589
59 02 22.13	6621.63400	5		8 09 50.898	+.095		+25 30 56.80	+0.20	1.571588
59 02 23.13	6622.63081	8		8 09 11.310	+.121		+25 34 05.54	-0.05	1.577908
59 02 26.12	6625.62137	3		8 07 23.014	+.088		+25 42 37.12	-0.21	1.598102
59 02 27.11	6626.61827	1		8 06 50.571	+.116		+25 45 09.71	+0.17	1.605230
59 03 03.10	6630.60606	8		8 04 59.512	+.110		+25 53 48.36	-0.25	1.635609
59 03 05.10	6632.60010	6		8 04 15.562	+.110		+25 57 14.31	-1.07	1.651861
59 03 07.09	6634.59422	3		8 03 39.498	+.127		+26 00 07.92	+0.07	1.668770
59 03 09.08	6636.58843	5		8 03 11.388	+.135		+26 02 27.00	+0.21	1.686302
59 03 14.07	6641.57437	6		8 02 36.078	+.119		+26 05 53.08	-0.50	1.732593
59 03 17.06	6644.56621	2		8 02 38.737	+.105		+26 06 25.71	+0.05	1.761866
59 03 18.06	6645.56354	1		8 02 43.535	+.095		+26 06 21.65	-0.13	1.771846
59 03 19.06	6646.56089	6		8 02 50.303	+.135		+26 06 10.74	-0.03	1.781928
59 03 20.05	6647.55826	5		8 02 58.922	+.099		+26 05 53.00	+0.19	1.792111
59 03 21.05	6648.55565	3		8 03 09.471	+.115		+26 05 27.90	-0.01	1.802389
59 03 23.05	6650.55049	2		8 03 36.142	+.110		+26 04 17.95	+0.22	1.823213
59 03 24.04	6651.54795	8		8 03 52.246	+.119		+26 03 33.01	+0.26	1.833753
59 03 25.04	6652.54543	6		8 04 10.155	+.124		+26 02 41.23	+0.05	1.844371
59 03 29.03	6656.53553	6		8 05 39.430	+.100		+25 58 10.75	+0.02	1.887580
59 04 01.02	6659.52832	2		8 07 04.346	+.051		+25 53 42.50	-0.12	1.920666
59 04 02.02	6660.52596	1		8 07 36.052	+.123		+25 52 01.06	+0.05	1.931807
59 04 05.01	6663.51897	2		8 09 20.533	+.073		+25 46 20.41	-0.38	1.965519

VESTA

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
59 04 07.01	6665.51441	1		8 10 38.085	+.122		+25 42 03.86	-0.77	1.988203
59 04 15.99	6674.49469	1		8 17 38.820	+.127		+25 18 12.06	-0.17	2.091615
59 04 17.99	6676.49048	6		8 19 27.064	+.094		+25 11 54.11	+0.36	2.114751
60 04 11.44	7035.94344	6		18 48 52.676	+.082		-18 34 27.39	-1.46	1.737780
60 04 19.42	7043.92733	8		18 57 09.524	+.054		-18 31 40.43	-0.16	1.648536
60 04 23.41	7047.91888	6		19 00 43.686	+.065		-18 31 13.18	+0.06	1.604955
60 04 29.40	7053.90566	9		19 05 17.860	+.051		-18 32 14.71	-0.51	1.541321
60 05 03.39	7057.89646	9		19 07 47.374	+.059		-18 34 19.79	-0.95	1.500304
60 05 05.39	7059.89175	6		19 08 51.652	+.027		-18 35 50.15	+0.12	1.480282
60 05 06.38	7060.88936	2		19 09 21.193	+.090		-18 36 44.73	-0.84	1.470401
60 05 07.38	7061.88694	9		19 09 48.824	+.045		-18 37 43.54	-0.61	1.460611
60 05 14.36	7068.86947	9		19 12 10.612	+.087		-18 47 19.56	-0.40	1.394835
60 05 16.36	7070.86428	6		19 12 33.838	+.075		-18 51 00.78	-0.28	1.377008
60 05 17.36	7071.86164	3		19 12 42.447	+.045		-18 53 01.79	-0.71	1.368272
60 06 01.31	7086.81937	9		19 10 48.285	+.067		-19 37 11.19	+0.28	1.253961
60 06 02.31	7087.81637	8		19 10 24.540	+.065		-19 41 04.30	+0.01	1.247623
60 06 06.30	7091.80413	6		19 08 30.440	+.067		-19 57 42.52	-1.31	1.224102
60 06 09.29	7094.79473	2		19 06 45.598	+.058		-20 11 14.67	-0.72	1.208468
60 06 16.27	7101.77211	1		19 01 42.549	+.084		-20 45 58.45	-0.98	1.179155
60 06 17.26	7102.76881	3		19 00 53.199	+.054		-20 51 13.53	-0.55	1.175830
60 06 19.26	7104.76217	2		18 59 10.659	+.053		-21 01 53.97	+0.68	1.169857
60 06 20.25	7105.75883	6		18 58 17.557	+.060		-21 07 20.57	-0.33	1.167214
60 06 25.24	7110.74194	2		18 53			-21 35 03.09	-0.04	1.157524
60 06 26.23	7111.73853	1		18 52 38.351	+.018		-21 40 40.63	-0.20	1.156304
60 06 27.23	7112.73512	6		18 51 39.224	+.064		-21 46 19.03	-0.53	1.155325
60 06 28.23	7113.73170	8		18 50 39.545	+.073		-21 51 57.19	-0.13	1.154590
60 06 29.22	7114.72827	9		18 49 39.428	+.072		-21 57 35.42	+0.46	1.154098
60 07 02.21	7117.71798	9		18 46 37.447	+.038		-22 14 32.02	-1.69	1.154090
60 07 06.20	7121.70426	9		18 42 34.718	+.081		-22 36 48.03	-0.58	1.157495
60 07 08.19	7123.69741	2		18 40 34.900	+.081		-22 47 45.04	-0.12	1.160651
60 07 09.19	7124.69400	9		18 39 35.611	+.007		-22 53 11.13	-1.05	1.162589
60 07 10.19	7125.69059	1		18 38 37.005	+.055		-22 58 33.05	-0.61	1.164766
60 07 13.18	7128.68042	9		18 35 45.292	+.056		-23 14 21.94	-0.52	1.172720
60 07 16.17	7131.67034	4		18 33 01.581	-.020		-23 29 40.34	-0.96	1.182783
60 07 20.15	7135.65709	9		18 29 39.783	+.072		-23 49 08.97	-0.88	1.199408
60 07 23.14	7138.64732	4		18 27 23.101	+.057		-24 03 00.56	-0.61	1.214207
60 07 25.14	7140.64090	9		18 25 59.989	+.082		-24 11 53.08	-0.85	1.225142
60 07 31.12	7146.62213	6		18 22 33.410	+.086		-24 36 40.54	-0.92	1.262807
60 08 02.11	7148.61605	8		18 21 39.871	+.078		-24 44 19.50	-0.66	1.276887
60 08 03.11	7149.61305	9		18 21 16.087	+.050		-24 48 02.12	-0.37	1.284198
60 08 17.07	7163.57347	1		18 19 19.241	+.043		-25 32 26.64	-0.69	1.403445
60 08 19.06	7165.56820	4		18 19 35.719	+.072		-25 37 40.42	-1.28	1.422775
60 08 27.04	7173.54805	4		18 22 02.213	+.063		-25 55 50.89	-1.59	1.504811
60 08 28.04	7174.54563	1		18 22 29.367	+.053		-25 57 47.63	-0.11	1.515542
60 09 03.03	7180.53158	6		18 25 51.328	+.053		-26 08 13.23	-0.22	1.581808
60 09 08.02	7185.52043	8		18 29 27.705	+.045		-26 15 02.46	+0.41	1.639205
60 09 09.01	7186.51825	4		18 30 15.903	+.026		-26 16 11.55	+0.88	1.650893
60 09 14.00	7191.50765	6		18 34 40.418	+.013		-26 20 56.96	-1.11	1.710269
60 09 15.00	7192.50559	8		18 35 37.894	+.048		-26 21 40.28	-0.64	1.722316
60 09 16.00	7193.50354	4		18 36 36.764	+.023		-26 22 18.53	+0.30	1.734415
60 09 17.00	7194.50150	1		18 37 37.087	+.025		-26 22 54.29	-0.64	1.746563
60 09 21.99	7199.49157	8		18 42 59.463	+.046		-26 24 39.79	-0.27	1.807972
60 09 23.98	7201.48770	6		18 45 17.652	+.049		-26 24 49.00	+0.19	1.832806
60 09 30.97	7208.47461	2		18 53 59.430	+.036		-26 22 52.58	-0.51	1.920600
60 10 01.97	7209.47280	1		18 55 18.430	+.018		-26 22 15.66	0.00	1.933229

VESTA

Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)	Distance
	243			h m s	s		° ′ ″	″	
60 10 07.96	7215.46213	2		19 03 33.784	+.006		−26 16 50.00	−0.14	2.009301
60 10 10.95	7218.45695	8		19 07 54.259	+.051		−26 12 56.35	−0.24	2.047473
60 10 11.95	7219.45524	6		19 09 22.804	+.025		−26 11 27.32	+0.09	2.060208
61 09 03.43	7545.93386	6		4 05			+13 09 35.83	+0.18	2.173446
61 09 12.41	7554.91311	1		4 11 16.871	+.073		+13 08 32.74	+0.66	2.066065
61 09 13.41	7555.91072	2		4 11 46.710	+.050		+13 08 03.40	+0.73	2.054331
61 09 17.40	7559.90101	1		4 13 31.519	+.082		+13 05 23.82	+1.14	2.007948
61 09 23.38	7565.88591	9		4 15 22.637	+.075		+12 59 22.47	+0.22	1.940406
61 09 24.38	7566.88333	1		4 15 35.521	+.024		+12 58 09.14	+0.37	1.929429
61 09 25.38	7567.88073	6		4 15 46.850	+.069		+12 56 52.62	+0.85	1.918540
61 09 28.37	7570.87281	8		4 16 10.692	+.072		+12 52 41.18	+2.04	1.886444
61 09 30.36	7572.86744	2		4 16 18.060	+.060		+12 49 34.33	+0.69	1.865559
61 10 05.35	7577.85364	8		4 16 05.822	+.068		+12 40 55.10	+0.53	1.815389
61 10 06.35	7578.85082	6		4 15 58.099	+.151		+12 39 02.36	+0.67	1.805740
61 10 07.34	7579.84798	9		4 15 48.395	+.048		+12 37 06.80	+0.61	1.796232
61 10 11.33	7583.83641	2		4 14 51.988	+.105		+12 28 58.39	+0.01	1.759688
61 10 13.33	7585.83050	6		4 14 12.911	+.065		+12 24 41.75	+0.99	1.742378
61 10 17.31	7589.81843	8		4 12 33.570	+.072		+12 15 43.03	+0.12	1.709863
61 10 18.31	7590.81536	6		4 12 04.368	+.074		+12 13 25.17	+0.58	1.702200
61 10 19.31	7591.81227	8		4 11 33.447	+.075		+12 11 05.37	+0.48	1.694730
61 10 23.29	7595.79973	2		4 09 13.110	+.078		+12 01 36.63	+0.76	1.666877
61 10 25.29	7597.79335	6		4 07 53.242	+.063		+11 56 48.02	+0.78	1.654221
61 10 27.28	7599.78690	2		4 06 27.255	+.059		+11 51 58.51	+1.03	1.642455
61 10 28.28	7600.78364	9		4 05 42.027	+.055		+11 49 32.92	+0.36	1.636915
61 10 30.27	7602.77709	6		4 04 07.324	+.061		+11 44 44.13	+0.49	1.626545
61 11 01.27	7604.77047	2		4 02 27.197	+.054		+11 39 57.67	+0.87	1.617147
61 11 08.24	7611.74689	6		3 56 00.152	+.069		+11 23 52.58	+0.06	1.592328
61 11 11.23	7614.73663	9		3 53 00.489	+.045		+11 17 30.32	−0.04	1.585728
61 11 12.23	7615.73319	6		3 51 59.301	+.062		+11 15 29.38	+0.63	1.584083
61 11 19.20	7622.70901	6		3 44 39.858	+.046		+11 03 00.29	+0.23	1.580486
61 11 22.19	7625.69862	1		3 41 29.832	+.095		+10 58 45.11	+0.37	1.583206
61 11 25.18	7628.68826	9		3 38 21.556	+.059		+10 55 16.20	+0.38	1.588475
61 11 26.18	7629.68481	1		3 37 19.522	+.038		+10 54 17.89	+0.51	1.590795
61 12 01.16	7634.66768	3		3 32 18.076	+.031		+10 50 56.24	+1.51	1.606580
61 12 02.16	7635.66428	6		3 31 20.010	+.044		+10 50 34.59	+1.38	1.610563
61 12 04.15	7637.65751	2		3 29 26.598	+.059		+10 50 11.10	+0.95	1.619341
61 12 06.15	7639.65078	6		3 27 37.216	+.037		+10 50 15.40	+0.98	1.629182
61 12 14.12	7647.62446	8		3 21 09.273	+.035		+10 55 21.15	+1.55	1.678688
61 12 16.11	7649.61805	6		3 19 46.471	+.043		+10 57		1.693444
61 12 23.09	7656.59617	9		3 15 46.928	+.048		+11 10 29.08	+1.21	1.751805
61 12 25.09	7658.59009	6		3 14 53.490	+.059		+11 15 10.53	+0.98	1.770257
62 01 04.06	7668.56090	2		3 12 09.813	+.043		+11 45 28.10	+1.12	1.872746
62 01 08.04	7672.54978	9		3 11 53.162	+.060		+12 00 33.41	+0.93	1.917865
62 01 11.04	7675.54166	8		3 11 58.732	+.060		+12 12 53.13	+0.68	1.952975
62 01 12.03	7676.53899	3		3 12 03.952	+.046		+12 17 10.82	+0.75	1.964896
62 01 13.03	7677.53633	2		3 12 10.860	+.049		+12 21 33.62	+0.65	1.976918
62 01 14.03	7678.53370	1		3 12 19.460	+.084		+12 26 02.01	+1.18	1.989036
62 01 15.03	7679.53109	9		3 12 29.655	+.072		+12 30 34.68	+0.89	2.001247
62 01 16.02	7680.52850	6		3 12 41.461	+.051		+12 35 12.22	+0.61	2.013547
62 01 17.02	7681.52592	1		3 12 54.898	+.049		+12 39 54.98	+0.77	2.025931
62 01 18.02	7682.52336	6		3 13 09.922	+.052		+12 44 42.37	+0.98	2.038395
62 01 24.00	7688.50839	6		3 15			+13 14 53.72	+0.68	2.114677
62 02 04.98	7700.48025	2		3 21 52.294	+.033		+14 21 27.27	+0.98	2.272648
62 02 06.97	7702.47577	6		3 23 17.574	+.070		+14 33 09.45	+0.84	2.299373
62 02 08.97	7704.47135	2		3 24 47.765	+.055		+14 44 59.51	+0.67	2.326143
62 02 10.96	7706.46699	1		3 26 22.804	+.065		+14 56 56.28	+0.20	2.352928

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

MOON

Lun.	Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)
		243			h m s	s		° ′ ″	″
409	56 01 21.99	5494.49286	1	1	2 42 47.059	1.283	S	+18 41 49.32	+4.73
	56 01 25.11	5497.61849	5	1	5 56 00.502	1.344	S	+22 18 29.72	-3.87
	56 01 27.20	5499.70416	0	1	8 07 36.082	1.272	S	+16 32 56.72	-5.54
	56 01 28.24	5500.74397	4	2	9 09 01.411	1.248	S	+11 45 48.70	-6.23
	56 02 01.38	5504.88419	3	2	12 47 16.247	1.120	S	- 9 55 49.07	-6.24
410	56 02 21.02	5524.52566	8	1	5 28 25.698	1.306	S	+22 28 37.54	-1.53
	56 02 22.06	5525.56769	1	1	6 33 03.109	1.324	N	+21 11 23.72	+0.45
	56 02 23.10	5526.60906	0	1	7 36 43.775	1.205	N	+18 22 05.35	-2.45
	56 02 24.14	5527.64894	0	1	8 38 15.461	1.300	N	+14 15 26.91	-4.61
	56 02 26.22	5529.72338	5	2	10 33 38.046	1.217	S	+ 3 41 32.29	-6.64
	56 02 27.25	5530.75848	1	2	11 28 15.680	1.186	S	- 1 56 20.78	-6.98
	56 02 29.32	5532.82682	0	2	13 14 48.981	1.200	S	-12 08 08.03	-5.17
	56 03 01.36	5533.86086	8	2	14 07 54.395	1.123	S	-16 11 11.04	-5.55
	56 03 03.42	5535.92951	4	2	15 54 55.488	1.193	S	-21 22 21.89	-1.58
411	56 03 19.97	5552.47932	1	1	6 11 54.552	1.406		+21 31	
	56 03 21.01	5553.51976	5	1	7 14 14.377	1.203	N	+19 18 19.82	-1.79
	56 03 22.05	5554.55887	0	1	8 14 39.233	1.224	N	+15 47 28.57	-3.29
	56 03 25.16	5557.66725	8	1	11 02 57.949	1.166	N	+ 0 39 29.46	-6.95
	56 03 27.23	5559.73558	8	2	12 49 31.568	1.149	S	- 9 48 30.92	-7.53
	56 03 31.37	5563.87435	4	2	16 25 40.064	1.200	S	-21 49 10.66	-2.78
	56 04 01.40	5564.90903	1	2	17 19 40.865	1.136	S	-22 09 04.14	+0.48
415	56 07 26.31	5680.81550	0	2	22 41 58.311	1.088	N	- 2 46 31.37	+5.72
	56 07 28.37	5682.87520	8	2	0 16 03.534	1.008	N	+ 6 32 06.43	+5.71
416	56 08 15.00	5700.50815	5	1	16 37 01.591	1.244	N	-21 33 39.14	-1.72
	56 08 16.04	5701.54254	3	1	17 30 37.677	1.095	N	-21 41 26.27	+0.42
	56 08 17.07	5702.57629	1	1	18 23 18.224	1.098		-20 46	
	56 08 18.10	5703.60914	3	1	19 14 41.244	1.113		-18 53	
	56 08 19.14	5704.64099	0	1	20 04 36.403	0.972	S	-16 09 02.68	+0.99
	56 08 22.23	5707.73165	8	2	22 27 20.791	0.875	N	- 4 19 02.03	+4.82
	56 08 23.26	5708.76131	3	2	23 14 07.219	1.112	N	+ 0 17 53.64	+4.83
	56 08 25.32	5710.82258	1	2	0 50 28.184	1.097	N	+ 9 28 16.09	+5.32
	56 08 26.35	5711.85523	3	2	1 41 33.694	1.216	N	+13 37 06.32	+3.83
417	56 09 12.98	5729.48935	5	1	18 04 13.510	1.128		-20 59	
	56 09 14.02	5730.52265	1	1	18 56 14.633	1.054		-19 27	
	56 09 15.05	5731.55486	2	1	19 46 41.467	1.044	S	-17 02 54.07	+1.46
	56 09 16.08	5732.58605	1	1	20 35 40.226	1.000	S	-13 53 06.76	+3.58
	56 09 18.14	5734.64637	5	1	22 10 39.823	1.033	S	- 5 52 29.71	+4.14
	56 09 19.17	5735.67626	1	1	22 57 45.554	1.015	S	- 1 20 06.50	+4.61
	56 09 21.23	5737.73779	5	2	0 34 29.032	1.111	N	+ 7 55 41.67	+5.17
	56 09 23.30	5739.80474	3	2	2 19 02.745	1.179	N	+15 58 57.73	+4.22
	56 09 25.37	5741.87920	8	2	4 14 27.316	1.185	N	+20 47 29.11	+1.78
418	56 10 11.96	5758.46732	2	1	19 26 44.590	0.969		-17 53	
	56 10 12.99	5759.49890	5	1	20 16 16.727	1.006	S	-15 01 27.66	+1.80
	56 10 14.02	5760.52948	1	1	21 04 22.662	0.953	S	-11 30 36.47	+4.86
	56 10 15.05	5761.55944	3	1	21 51 34.732	0.975	S	- 7 29 10.89	+4.85
	56 10 16.08	5762.58924	8	1	22 38 32.915	0.991	S	- 3 05 36.76	+6.06
	56 10 17.11	5763.61939	1	1	23 26 02.185	1.108	S	+ 1 30 46.06	+5.33
	56 10 20.21	5766.71725	2		1 59		N	+14 37 49.08	+3.39
	56 10 25.41	5771.91240	8	2	7 00 40.258	1.283	S	+18 58 35.31	-5.65
419	56 11 09.94	5787.44192	2	1	20 44 23.695	0.979		-12 55	
	56 11 10.97	5788.47190	1	1	21 31 37.832	0.959	S	- 9 07 35.96	+4.16
	56 11 12.00	5789.50141	3	1	22 18 10.771	1.044	S	- 4 55 29.85	+4.28
	56 11 13.03	5790.53100	8	1	23 04 50.726	0.962	S	- 0 27 18.34	+4.78
	56 11 15.09	5792.59288	2	1	0 42 05.177	0.997	S	+ 8 39 39.19	+4.50
	56 11 16.12	5793.62638	3	1	1 34 24.544	1.152	S	+12 54 02.01	+4.68
	56 11 19.24	5796.74091	3	2	4 31 36.810	1.341	N	+20 55 15.82	+1.47
	56 11 20.28	5797.78248	5	2	5 35 34.754	1.298	S	+21 03 32.54	-1.37
	56 11 22.36	5799.86442	2		7 41		S	+16 58 00.91	-2.00
	56 11 23.40	5800.90307	8	2	8 41 31.454	1.278	S	+13 07 31.73	-5.93

MOON

Lun.	Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)
		243			h m s	s		° ′ ″	″
419	56 11 24.44	5801.93988	1	2	9 38 37.486	1.233	S	+ 8 30 38.29	-7.73
	56 11 25.47	5802.97521	5	2	10 33 34.465	1.228	S	+ 3 27 38.67	-6.20
420	56 12 10.97	5818.47289	8	1	23 31 20.364	1.024	S	+ 2 04 38.04	+6.39
	56 12 19.27	5826.77203	3	2	7 14 49.459	1.429	S	+18 21 34.74	-3.43
	56 12 20.31	5827.81302	2	2	8 17 57.209	1.270	S	+14 50 08.82	-4.11
421	57 01 11.01	5849.51283	5	1	2 31 13.768	1.203	S	+16 27 28.11	+3.99
	57 01 13.08	5851.58940	1	1	4 29 40.633	1.342	S	+20 48 00.42	+1.42
	57 01 15.17	5853.67399	8	1	6 39 42.530	1.377	S	+19 43 17.59	-2.97
	57 01 17.25	5855.75779	3	2	8 48 35.923	1.389	S	+12 46 09.25	-5.45
	57 01 20.37	5858.87127	5	2	11 44 17.005	1.175	S	- 3 02 40.42	-6.34
422	57 02 11.07	5880.57665	2	1	6 05 36.430	1.372	S	+20 26 14.94	-1.45
	57 02 12.11	5881.61837	8	1	7 09 47.487	1.272		+18 29	
	57 02 14.20	5883.70045	3	1	9 16 11.955	1.365	S	+10 39 07.51	-5.69
	57 02 17.31	5886.81521	5	2	12 13 43.996	1.224	S	- 5 34 32.83	-7.52
	57 02 18.35	5887.85198	2	2	13 10 46.180	1.101	S	-10 29 42.28	-5.71
	57 02 20.42	5889.92489	5	2	15 03 55.730	1.144	S	-17 46 32.60	-3.48
	57 02 21.46	5890.96104	8	2	16 00 04.554	1.212		-19 49	
423	57 03 09.98	5907.48531	1	1	5 40 09.846	1.277	S	+20 32 45.76	-0.76
	57 03 11.02	5908.52511	5	1	6 41 34.347	1.308		+19 18	
	57 03 13.10	5910.60481	1	1	8 44 32.593	1.294	N	+12 56 00.03	-4.23
	57 03 14.14	5911.64381	3	1	9 44 48.524	1.275	N	+ 8 11 55.44	-5.65
	57 03 16.21	5913.71999	2	1	11 42 40.944	1.184	S	- 2 36 53.02	-7.89
	57 03 17.25	5914.75763	1	2	12 40 58.510	1.281	S	- 7 51 46.17	-5.92
	57 03 18.29	5915.79527	3	2	13 39 15.948	1.258	S	-12 29 38.78	-5.80
424	57 04 10.05	5938.55253	8	1	9 19 26.909	1.308	N	+10 08 54.42	-5.59
	57 04 11.09	5939.58974	5	1	10 17 06.955	1.234	N	+ 5 14 49.55	-6.02
	57 04 12.12	5940.62663	8	1	11 14 19.625	1.236	N	- 0 01 10.04	-6.58
	57 04 14.20	5942.70085	1	1	13 09 23.133	1.278	S	-10 11 16.43	-5.66
	57 04 15.23	5943.73864	2	2	14 07 53.143	1.314	S	-14 22 33.59	-5.12
	57 04 16.27	5944.77679	1	2	15 06 55.136	1.274	S	-17 34 26.29	-4.09
425	57 05 09.03	5967.53830	3	1	10 53 13.616	1.238	N	+ 1 53 08.34	-5.75
	57 05 10.07	5968.57399	8	1	11 48 42.207	1.165	N	- 3 15 14.14	-6.72
	57 05 11.11	5969.60998	2	1	12 44 37.412	1.180	N	- 8 11 31.41	-4.37
426	57 06 11.16	6000.66957	8	1	16 12 53.295	1.247	N	-19 45 11.66	-1.84
	57 06 12.20	6001.70683	1	1	17 10 37.883	1.167	N	-20 25 28.80	-0.37
	57 06 13.24	6002.74333	3	2	18 07 16.490	1.185	N	-19 55 54.59	+0.27
	57 06 14.27	6003.77850	2	2	19 02 00.217	1.109	N	-18 22 50.60	+1.66
	57 06 15.31	6004.81204	5	2	19 54 22.376	1.041	N	-15 56 22.90	+2.28
	57 06 16.34	6005.84393	1	2	20 44 21.947	1.066	N	-12 47 59.14	+4.12
	57 06 17.37	6006.87442	2	2	21 32 19.281	0.903		- 9 08	
427	57 07 11.19	6030.69083	8	1	18 41 52.050	1.103	N	-19 05 36.11	+1.58
	57 07 14.28	6033.78834	2	2	21 14 28.810	1.010	N	-10 42 25.35	+3.87
	57 07 15.31	6034.81823	5	2	22 01 35.213	0.969	N	- 6 50 35.13	+3.55
	57 07 17.37	6036.87628	1	2	23 33 17.324	1.012	N	+ 1 29 15.07	+4.77
428	57 08 07.10	6057.60502	8	1	18 24 24.367	1.175	N	-19 27 51.32	+0.43
	57 08 08.13	6058.63910	3	1	19 17 33.671	1.135	N	-17 44 30.09	+1.78
	57 08 11.23	6061.73344	1	2	21 45 36.545	0.967	N	- 8 17 47.80	+4.29
	57 08 14.32	6064.82083	8	2	0 03 36.873	1.044	N	+ 4 02 19.24	+4.54
	57 08 16.38	6066.88088	5	2	1 38 12.832	1.049	N	+11 47 43.86	+4.54
	57 08 17.41	6067.91288	1	2	2 28 22.032	1.116	N	+15 03 40.15	+3.96
429	57 09 03.01	6084.51956	8	1	18 07 27.349	1.188		-19 36	
	57 09 06.11	6087.61863	8	1	20 42 20.231	1.045	S	-12 59 16.45	+3.70
	57 09 07.14	6088.64910	1	1	21 30 16.418	1.088	S	- 9 29 44.50	+4.50
	57 09 13.32	6094 82790	2	2	2 12 06.536	1.009	N	+13 52 26.99	+3.46
	57 09 16.43	6097.93141	2	2	4 53 23.633	1.104	N	+19 45 00.15	+0.28

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

MOON

Lun.	Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)
		243			h m s	s		° ′ ″	″
430	57 10 02.00	6113.50128	8	1	19 35 23.658	1.088		−16 37	
	57 10 03.03	6114.53350	1	1	20 25 51.667	1.038		−13 53	
	57 10 04.06	6115.56434	3	1	21 14 20.193	1.108	S	−10 35 13.45	+4.44
	57 10 05.09	6116.59417	2	1	22 01 20.515	0.945	S	− 6 51 52.41	+4.33
	57 10 10.24	6121.74329	5	2	1 56 22.994	1.047	N	+12 47 08.78	+4.43
	57 10 12.31	6123.81002	3	2	3 40 37.157	1.198	N	+18 03 01.40	+2.39
	57 10 13.34	6124.84555	1	2	4 35 52.295	1.121	N	+19 24 07.86	+0.77
	57 10 14.38	6125.88224	2	2	5 32 47.049	1.246		+19 41	
	57 10 15.41	6126.91964	8	2	6 30 44.048	1.220	S	+18 50 35.16	−1.71
431	57 10 29.94	6141.44644	1	1	20 06 35.696	1.049		−14 55	
	57 11 04.09	6146.59624	8	1	0 02 36.943	0.993	S	+ 3 52 25.38	+4.67
	57 11 07.19	6149.68959	5	1	2 29 13.761	1.049	S	+14 48 21.86	+4.29
	57 11 08.22	6150.72366	8	2	3 22 22.738	1.138	N	+17 22 16.06	+2.81
	57 11 09.25	6151.75931	3	2	4 17 47.135	1.176	N	+19 03 44.71	+2.41
	57 11 11.33	6153.83375	5	2	6 13 10.147	1.243	S	+19 12 25.51	−0.90
	57 11 12.37	6154.87142	2	2	7 11 29.799	1.242	S	+17 32 27.94	−2.83
	57 11 13.40	6155.90870	1	2	8 09 16.153	1.193	S	+14 47 25.97	−3.99
432	57 11 29.98	6172.48056	3	1	22 58 04.717	1.025	S	− 1 56 04.30	+5.03
	57 12 01.00	6173.50959	1		23 43		S	+ 2 10 01.24	+5.29
	57 12 02.03	6174.53901	6	1	0 30 21.639	0.938	S	+ 6 12 26.36	+5.11
	57 12 03.06	6175.56934	6	1	1 18 06.795	1.062	S	+10 02 33.54	+5.50
	57 12 06.16	6178.67000	5	1	3 55 16.682	1.205	S	+18 30 26.76	+2.34
433	57 12 29.98	6202.48147	6	1	0 57 40.562	1.065	S	+ 8 15 33.22	+5.43
	57 12 31.01	6203.51213	2	1	1 45 53.559	1.051	S	+11 52 36.29	+4.96
	58 01 02.08	6205.57850	8	1	3 29 36.935	1.153	S	+17 32 00.43	+1.86
	58 01 03.11	6206.61466	2	1	4 25 46.483	1.103	S	+19 09 53.77	+1.23
	58 01 04.15	6207.65261	5	1	5 24 30.440	1.226	S	+19 43 13.03	+0.07
	58 01 05.19	6208.69174	1	1	6 24 57.163	1.360	S	+19 03 02.18	−0.69
	58 01 06.23	6209.73124	6	2	7 25 56.381	1.407	S	+17 06 59.63	−1.18
	58 01 08.31	6211.80859	3	2	9 25 30.182	1.204	S	+ 9 58 30.16	−6.12
	58 01 11.42	6214.91829	6	2	12 15 44.359	1.211•	S	− 4 37 44.22	−6.04
	58 01 12.45	6215.95437	5	2	13 11 46.783	1.194	S	− 9 14 45.84	−6.27
434	58 01 27.96	6231.45566	8	1	2 14 44.703	1.093	S	+13 29 31.82	+4.37
	58 01 28.99	6232.48818	6	1	3 05 38.389	1.111	S	+16 15 42.17	+2.50
	58 01 31.06	6234.55884	2		4 55		S	+19 24 26.75	+0.40
	58 02 02.14	6236.63598	1	1	6 54 49.767	1.354	S	+18 10 40.55	−2.18
	58 02 03.18	6237.67560	8	1	7 55 59.290	1.313	S	+15 42 01.86	−4.26
	58 02 05.25	6239.75392	5	2	9 56 57.734	1.238	S	+ 7 37 21.43	−7.16
	58 02 09.40	6243.90460	2	2	13 50 17.979	1.229	S	−11 46 47.05	−7.10
	58 02 10.44	6244.94220	6	2	14 48 32.558	1.303	S	−15 18 00.68	−5.13
	58 02 11.48	6245.97994	8	2	15 46 58.198	1.234	S	−17 48 13.64	−2.55
435	58 03 05.20	6267.69668	6	1	10 24 42.445	1.404	S	+ 5 20 49.15	−7.13
	58 03 11.43	6273.93023	2	2	16 25 35.128	1.246	S	−18 36 43.03	−3.84
436	58 04 02.14	6295.63928	8	1	10 52 12.838	1.284	N	+ 2 57 44.85	−5.79
	58 04 03.18	6296.67776	6	1	11 51 42.962	1.382		− 2 10	
	58 04 04.22	6297.71689	1	2	12 52 09.964	1.319	S	− 7 12 54.17	−6.21
	58 04 05.26	6298.75677	3	2	13 53 40.928	1.403	S	−11 43 52.45	−5.81
	58 04 09.42	6302.91641	2		17 59		N	−18 55 20.77	+0.39
437	58 05 01.12	6324.62167	3	1	12 21 07.089	1.365	N	− 4 41 18.26	−6.92
438	58 05 29.07	6352.56861	3	1	12 54 53.417	1.300	N	− 7 22 18.06	−5.69
	58 05 30.11	6353.60679	8	1	13 53 57.672	1.264	N	−11 42 33.07	−5.38
	58 05 31.15	6354.64633	6	1	14 54 59.780	1.338	N	−15 17 15.53	−5.10
	58 06 05.34	6359.84327	6		19 59		N	−15 22 00.37	+1.86
	58 06 07.41	6361.90987	5	2	21 43 07.526	1.024	N	− 8 44 35.78	+4.04

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

MOON

Lun.	Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)
		243			h m s	s		° ′ ″	″
439	58 06 26.02	6380.51854	1	1	13 32 59.214	1.247	N	-10 05 16.10	-6.68
	58 06 28.10	6382.59534	6	1	15 31 45.964	1.387	N	-16 49 22.79	-2.89
	58 06 29.14	6383.63514	1	1	16 33 11.161	1.370	N	-18 37 17.43	-2.16
	58 06 30.17	6384.67505	2	1	17 34 45.240	1.365	N	-19 09 56.62	-1.33
	58 07 01.21	6385.71418	8	1	18 35 11.990	1.298	N	-18 27 31.81	+0.96
	58 07 02.25	6386.75178	6	2	19 33 25.784	1.266	N	-16 38 02.84	+2.12
	58 07 04.32	6388.82103	8	2	21 21 18.633	1.108	N	-10 32 04.29	+4.11
	58 07 07.41	6391.91312	2	2	23 46 06.132	0.929	N	+ 1 18 10.63	+4.35
442	58 09 22.03	6468.52578	6	1	19 30 23.388	1.296		-16 30	
	58 09 23.06	6469.56037	2	1	20 24 16.534	1.027		-14 02	
	58 09 24.09	6470.59332	5	1	21 15 47.566	1.084	S	-10 55 35.57	+4.06
	58 09 25.12	6471.62488	3	1	22 05 18.152	1.125	S	- 7 21 06.83	+5.01
	58 09 29.25	6475.74467	2	2	1 14 02.920	0.886	N	+ 8 03 00.74	+3.95
	58 09 30.27	6476.77491	8	2	2 01 38.906	0.986	N	+11 23 54.73	+3.51
	58 10 05.44	6481.93929	1	2	6 18 43.650	1.168	S	+18 19 39.13	-0.88
443	58 10 21.01	6497.50845	5	1	20 59 41.881	1.131		-11 55	
	58 10 25.13	6501.63055	6	1	0 11 46.396	1.081	S	+ 3 06 07.58	+5.24
	58 10 26.16	6502.66014	1	1	0 58 26.494	0.980	S	+ 6 52 00.86	+3.94
	58 10 27.19	6503.69018	8	1	1 45 45.664	1.005	S	+10 20 36.01	+4.33
	58 10 31.32	6507.81887	8	2	5 07 20.906	1.177	S	+18 32 07.05	+0.62
	58 11 01.35	6508.85310	3	2	6 00 43.014	1.187	S	+18 33 12.89	-0.61
	58 11 04.46	6511.95766	2	2	8 43 31.486	1.243	S	+12 56 57.56	-3.42
444	58 11 18.99	6526.48610	5	1	22 21 45.053	1.060	S	- 6 07 28.40	+4.16
	58 11 20.02	6527.51643	2	1	23 09 29.346	1.056	S	- 2 12 48.91	+4.07
	58 11 21.05	6528.54605	8	1	23 56 12.647	1.006	S	+ 1 43 47.51	+5.55
	58 11 22.08	6529.57551	6	1	0 42 41.578	1.087	S	+ 5 34 04.54	+5.48
	58 11 23.11	6530.60528	1	1	1 29 37.172	0.996	S	+ 9 10 03.42	+3.30
	58 11 24.14	6531.63575	5	1	2 17 33.603	1.014	S	+12 23 36.59	+4.34
	58 11 25.17	6532.66720	8	1	3 06 54.444	1.062	S	+15 06 01.55	+2.11
	58 11 27.23	6534.73331	6	2	4 50 15.068	1.142	S	+18 23 32.98	+1.01
	58 11 30.34	6537.83744	1	2	7 32 26.673	1.254	S	+16 32 34.45	-5.02
	58 12 02.41	6539.90677	2	2	9 20 26.372	1.049	S	+10 46 37.09	-3.64
445	58 12 16.93	6554.42991	6	1	22 51 00.659	1.085	S	- 3 58 42.98	+4.91
	58 12 18.99	6556.48997	3	1	0 25 37.200	1.074	S	+ 3 58 14.69	+5.64
	58 12 21.05	6558.54975	8	1	1 59 49.220	1.024	S	+11 06 18.16	+4.17
	58 12 23.11	6560.61279	5	1	3 38 43.934	1.078	S	+16 23 36.20	+2.88
	58 12 25.18	6562.68048	6	1	5 24 21.531	1.144	S	+18 44 13.99	+0.83
	58 12 27.25	6564.75120	6	2	7 14 22.506	1.226	S	+17 17 12.22	-2.59
	58 12 31.39	6568.89116	8	2	10 52 14.304	1.190	S	+ 4 01 48.93	-6.75
	59 01 03.50	6571.99739	2	2	13 37 27.360	1.183	S	- 9 24 53.10	-5.38
446	59 01 17.99	6586.49344	1	1	2 28 54.843	1.039	S	+12 40 53.45	+2.96
	59 01 19.02	6587.52485	2	1	3 18 12.402	1.085	S	+15 17 59.02	+2.30
	59 01 20.06	6588.55739	8	1	4 09 08.368	1.096	S	+17 14 58.28	+2.02
	59 01 23.16	6591.66169	1	1	6 51 34.001	1.205	S	+17 52 46.45	-2.38
	59 01 24.20	6592.69775	3	1	7 47 35.174	1.157	S	+16 06 30.24	-2.70
	59 01 25.23	6593.73383	6	2	8 43 37.254	1.214	S	+13 22 52.93	-4.12
	59 01 28.34	6596.84060	2	2	11 29 36.644	1.074	S	+ 1 08 34.08	-5.93
	59 01 31.45	6599.94922	5	2	14 18 17.512	1.291	S	-11 53 32.68	-5.25
	59 02 01.49	6600.98725	1		15 17		S	-15 07 20.45	-2.45
447	59 02 15.97	6615.46874	8	1	3 47 34.843	1.013	S	+16 16 43.85	+2.83
	59 02 20.11	6619.60590	2	1	7 21 24.169	1.232	N	+16 56 36.29	-1.95
	59 02 22.18	6621.67827	5	1	9 13 47.158	1.277	N	+11 32 22.33	-3.68
	59 02 23.21	6622.71463	8	1	10 10 13.727	1.288	S	+ 7 36 38.60	-6.08
	59 02 25.29	6624.78771	2	2	12 03 38.460	1.223	S	- 1 34 32.39	-5.83
	59 02 26.32	6625.82480	3	2	13 01 08.433	1.280	S	- 6 13 30.20	-6.38
	59 02 27.36	6626.86254	8	2	13 59 34.692	1.282	S	-10 28 33.50	-5.34
	59 02 28.40	6627.90103	6		14 59		S	-14 01 29.59	-5.62

MOON

Lun.	Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)
		243			h m s	s		° ′ ″	″
448	59 03 17.98	6645.48011	1	1	6 02 16.351	1.065		+18 17	
	59 03 19.01	6646.51460	6	1	6 56 01.669	1.185		+17 30	
	59 03 20.05	6647.54967	5	1	7 50 36.663	1.220	N	+15 47 14.52	-2.65
	59 03 21.09	6648.58519	3	1	8 45 50.453	1.197	N	+13 07 50.90	-2.42
	59 03 23.16	6650.65745	2	1	10 38 03.419	1.315	N	+ 5 26 04.91	-6.61
	59 03 24.19	6651.69437	8	1	11 35 18.474	1.276	N	+ 0 47 11.70	-6.83
	59 03 25.23	6652.73206	6	2	12 33 40.712	1.292	S	- 4 00 35.72	-7.22
	59 03 26.27	6653.77070	3	2	13 33 25.104	1.359	S	- 8 35 42.60	-5.75
	59 03 29.39	6656.89143	6	2	16 39 34.265	1.403	S	-17 37 51.86	-3.64
449	59 04 16.99	6675.49461	8	1	8 21 29.536	1.168	N	+14 24 33.39	-3.07
	59 04 18.03	6676.52926	6	1	9 15 27.763	1.268	N	+11 22 01.40	-4.21
	59 04 24.26	6682.75564	8	2	15 06 00.682	1.446		-14 18	
	59 04 25.30	6683.79770	2	2	16 10 41.040	1.419		-16 54	
450	59 05 18.04	6706.54453	6	1	11 35 47.664	1.216	N	+ 0 51 40.56	-7.57
	59 05 20.12	6708.61864	8	1	13 30 40.978	1.331	N	- 8 20 56.90	-6.18
	59 05 22.20	6710.70012	8	1	15 36 13.376	1.466	N	-15 42 35.71	-4.83
	59 05 23.24	6711.74300	2	2	16 42 05.284	1.442	N	-17 46 42.33	-2.99
	59 05 25.33	6713.82795	6	2	18 52 38.545	1.482	N	-17 45 00.00	+1.22
	59 05 27.41	6715.90518	5	2	20 52 01.674	1.258		-12 59	
451	59 06 18.10	6737.60442	3	1	15 04 29.405	1.468	N	-14 08 39.34	-4.96
	59 06 19.15	6738.64588	8	1	16 08 17.920	1.356	N	-16 50 49.12	-3.57
	59 06 20.19	6739.68859	6	1	17 13 55.189	1.379	N	-18 18 13.67	-2.14
	59 06 21.23	6740.73143	1	2	18 19 43.275	1.493	N	-18 21 36.77	-0.15
	59 06 22.27	6741.77314	2	2	19 23 53.404	1.393	N	-17 03 31.51	+1.97
	59 06 24.35	6743.84995	5	2	21 22 40.303	1.223	N	-11 20 10.79	+4.05
	59 06 25.38	6744.88473	8	2	22 16 50.097	1.188	N	- 7 32 06.67	+4.54
452	59 07 17.09	6766.59436	8	1	16 44 17.773	1.373	N	-17 41 55.06	-2.74
	59 07 18.14	6767.63615	3	1	17 48 35.582	1.453	N	-18 27 03.94	-1.73
	59 07 19.18	6768.67786	1	1	18 52 45.662	1.362	N	-17 51 33.07	+0.88
	59 07 24.36	6773.86074	8	2	23 36 31.811	1.093	N	- 1 22 47.02	+4.96
453	59 08 13.01	6793.50543	3	1	16 22 20.690	1.385	N	-16 56 51.55	-2.95
	59 08 14.05	6794.54568	5	1	17 24 24.634	1.377	N	-18 10 15.67	-1.80
	59 08 15.09	6795.58624	1	1	18 26 54.830	1.351	N	-18 08 43.71	+0.05
	59 08 16.13	6796.62627	2	1	19 28 39.406	1.293		-16 52	
	59 08 19.24	6799.73742	2	2	22 20 58.239	1.160	N	- 7 30 07.66	+4.89
	59 08 20.27	6800.77109	6	2	23 13 32.367	1.107		- 3 23	
	59 08 21.30	6801.80350	5	2	0 04 16.580	1.124	N	+ 0 46 09.90	+4.54
	59 08 22.34	6802.83506	1	2	0 53 46.877	1.044	N	+ 4 47 22.88	+4.52
	59 08 23.37	6803.86618	2	2	1 42 40.279	1.020	N	+ 8 29 55.99	+3.98
	59 08 25.43	6805.92867	5	2	3 20 46.616	1.071	N	+14 27 49.73	+3.41
454	59 09 10.99	6822.49882	6	1	18 07 07.764	1.397		-18 10	
	59 09 12.04	6823.53821	1	1	19 07 57.215	1.330		-17 20	
	59 09 13.08	6824.57650	3	1	20 07 10.842	1.280	S	-15 24 46.55	+1.53
	59 09 14.11	6825.61332	6	1	21 04 16.967	1.262	S	-12 34 27.03	+3.90
	59 09 15.15	6826.64856	1	1	21 59 07.137	1.139	S	- 9 03 47.51	+4.19
	59 09 16.18	6827.68237	2	1	22 51 53.007	1.147	S	- 5 07 45.72	+5.28
	59 09 19.28	6830.77827	3	2	1 22 10.585	1.119	N	+ 6 55 31.88	+4.40
	59 09 20.31	6831.80954	6	2	2 11 16.602	1.067	N	+10 23 58.39	+3.88
	59 09 21.34	6832.84098	2	2	3 00 35.998	1.052	N	+13 21 18.81	+3.53
	59 09 22.37	6833.87276	8	2	3 50 26.215	1.099	N	+15 40 48.60	+3.73
	59 09 23.40	6834.90501	1	2	4 40 57.316	1.123	N	+17 16 51.17	+2.37
	59 09 24.44	6835.93777	5	2	5 32 12.100	1.084		+18 05	
455	59 10 12.06	6853.56264	3	1	21 41 29.736	1.114	S	-10 15 37.69	+4.07
	59 10 13.10	6854.59627	5	1	22 33 59.907	1.141	S	- 6 30 24.57	+4.83
	59 10 16.19	6857.69155	6	1	1 03 24.432	1.115	S	+ 5 30 05.62	+5.47
	59 10 17.22	6858.72269	2	2	1 52 18.847	1.028	S	+ 9 07 49.95	+4.14
	59 10 18.25	6859.75402	1	2	2 41 29.682	1.077	N	+12 18 25.33	+4.40
	59 10 19.29	6860.78571	6	2	3 31 11.630	1.120	N	+14 53 56.32	+2.84
	59 10 20.32	6861.81783	8	2	4 21 30.765	1.061	N	+16 47 54.50	+2.70

SIX-INCH TRANSIT CIRCLE OBSERVATIONS OF THE SUN, MOON, AND PLANETS

MOON

Lun.	Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)
		243			h m s	s		° ′ ″	″
455	59 10 21.35	6862.85035	2	2	5 12 25.390	1.092		+17 55	
456	59 11 09.01	6881.51176	6	1	22 18 25.899	1.216	S	− 7 47 01.27	+5.77
	59 11 10.04	6882.54435	5	1	23 09 25.158	1.107	S	− 3 49 55.19	+6.11
	59 11 11.08	6883.57585	2	1	23 58 50.704	1.078	S	+ 0 13 06.28	+6.21
	59 11 13.14	6885.63752	8	1	1 35 47.247	1.045	S	+ 7 55 37.15	+5.89
	59 11 18.30	6890.79705	6	2	5 45 51.099	1.100	S	+18 20 14.77	+0.58
	59 11 19.33	6891.83001	2	2	6 37 22.615	1.081	S	+18 05 44.20	−2.47
	59 11 20.36	6892.86292	8	2	7 28 51.066	1.141	S	+17 00 02.17	−2.54
	59 11 23.46	6895.96100	2	2	10 02 17.529	1.104	S	+ 9 05 15.32	−4.74
457	59 12 09.02	6911.52270	1	1	0 32 29.794	1.074	S	+ 2 46 56.48	+4.86
	59 12 10.05	6912.55339	6	1	1 20 45.204	1.056	S	+ 6 37 57.98	+4.67
	59 12 11.08	6913.58406	5	1	2 08 58.563	1.025	S	+10 08 22.46	+4.39
	59 12 15.21	6917.71159	5	2	5 28 53.999	1.080	S	+18 17 40.83	+0.82
	59 12 16.25	6918.74467	6	2	6 20 36.223	1.105	S	+18 23 00.18	−0.53
	59 12 20.38	6922.87569	6	2	9 45 33.877	1.078	S	+10 30 26.48	−4.39
	59 12 22.44	6924.94045	8	2	11 26 57.326	1.149	S	+ 2 49 14.85	−5.41
	59 12 23.47	6925.97372	3	2	12 18 56.362	1.214	S	− 1 29 20.79	−5.66
458	60 01 09.06	6942.56136	1	1	3 30 32.453	1.064	S	+14 41 21.86	+2.89
	60 01 10.09	6943.59324	6	1	4 20 30.473	1.131	S	+16 42 52.56	+1.82
	60 01 12.16	6945.65874	8	1	6 02 58.380	1.087	S	+18 25 08.23	+0.54
	60 01 16.29	6949.79126	6	2	9 30 05.911	1.135	S	+11 41 25.05	−5.23
	60 01 17.32	6950.82375	5	2	10 20 57.228	1.068	S	+ 8 13 45.12	−5.08
	60 01 20.42	6953.92224	2	2	12 54 59.917	1.131	S	− 4 09 48.45	−5.44
	60 01 21.46	6954.95689	8	2	13 48 58.451	1.192	S	− 8 19 16.73	−5.72
459	60 02 03.94	6968.44326	8	1	2 22 30.635	1.095	S	+10 33 25.09	+5.10
	60 02 04.97	6969.47478	3	1	3 11 58.011	1.066	S	+13 31 16.38	+3.75
	60 02 07.04	6971.53883	1	1	4 52 19.961	1.137	S	+17 25 39.28	+1.80
	60 02 08.07	6972.57156	6	1	5 43 32.711	1.035	S	+18 12 46.54	−0.17
	60 02 10.14	6974.63808	9	1	7 27 28.820	1.168	N	+17 12 13.33	−2.40
	60 02 13.24	6977.73789	6	2	10 03 25.748	1.040		+ 9 32	
	60 02 16.34	6980.83762	8	2	12 39 15.684	1.168	S	− 2 43 26.86	−5.72
	60 02 18.41	6982.90761	1	2	14 28 12.429	1.248	S	−10 50 23.80	−4.16
	60 02 20.48	6984.98335	6	2	16 25 27.739	1.506	S	−16 36 04.63	−2.60
460	60 03 07.02	7000.51627	6	1	6 14 06.037	1.158	S	+18 10 52.57	−0.71
	60 03 09.08	7002.58258	2	1	7 57 44.167	1.140	N	+16 11 54.92	−1.68
	60 03 11.15	7004.64911	8	1	9 41 40.731	1.112	N	+10 58 12.94	−4.45
	60 03 12.18	7005.68247	9	1	10 33 47.772	1.153	N	+ 7 21 10.31	−5.83
	60 03 13.22	7006.71609	1	1	11 26 17.099	1.127	N	+ 3 15 59.42	−7.21
	60 03 14.25	7007.75022	6	2	12 19 30.598	1.200	S	− 1 05 00.61	−6.04
	60 03 15.29	7008.78516	9	2	13 13 53.903	1.189	S	− 5 27 16.33	−5.97
	60 03 16.32	7009.82119	3	2	14 09 52.052	1.316	S	− 9 34 23.27	−5.14
	60 03 19.44	7012.93674	9	2	17 08 32.959	1.333		−17 38	
461	60 04 06.03	7030.52636	3	1	8 26 56.445	1.080	N	+15 04 04.69	−2.00
	60 04 08.09	7032.59213	8	1	10 09 47.778	1.181	N	+ 9 06 38.13	−5.28
	60 04 10.16	7034.65939	1	1	11 54 48.400	1.108	N	+ 0 56 54.92	−6.54
	60 04 11.19	7035.69436	6	1	12 49 14.170	1.275	N	− 3 30 39.43	−7.12
	60 04 13.27	7037.76848	2	2	14 44 09.158	1.312	S	−11 50 16.06	−7.94
	60 04 14.31	7038.80785	9	2	15 44 56.229	1.377	S	−15 03 40.13	−4.88
	60 04 16.39	7040.88950	6	2	17 50 43.479	1.474		−18 13	
462	60 05 05.00	7059.50280	6	1	9 47 15.874	1.181	N	+10 47 34.79	−4.65
	60 05 06.04	7060.53519	2		10 37		N	+ 7 12 14.72	−5.55
	60 05 07.07	7061.56812	9		11 29		N	+ 3 08 27.98	−5.66
	60 05 14.34	7068.83992	9	2	18 29 31.508	1.467	N	−18 20 48.57	+0.59
	60 05 16.42	7070.92135	6	2	20 34 59.728	1.280	N	−14 57 26.73	+2.88
463	60 06 05.05	7090.54554	9	1	12 51 11.599	1.153	N	− 3 24 26.73	−6.41
	60 06 06.08	7091.58087	6	1	13 46 09.342	1.251	N	− 7 44 43.54	−7.94
	60 06 07.12	7092.61841	8	1	14 44 17.960	1.298	N	−11 46 17.97	−5.86
	60 06 09.20	7094.70052	2	1	16 50 44.974	1.337	N	−17 28 53.81	−3.19

MOON

Lun.	Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)
		243			h m s	s		° ′ ″	″
463	60 06 10.24	7095.74401	5	2	17 57 29.536	1.555	N	−18 29 57.61	−1.66
	60 06 11.29	7096.78754	6	2	19 04 17.661	1.544	N	−18 03 42.41	−0.27
	60 06 12.33	7097.82980	9	2	20 09 14.963	1.449	N	−16 15 14.64	+1.16
464	60 07 06.10	7121.60386	9	1	16 17 38.045	1.411	N	−16 20 07.27	−3.12
	60 07 08.19	7123.68967	2	1	18 29 25.549	1.454	N	−18 29 18.75	−0.22
	60 07 09.23	7124.73323	9	2	19 36 15.679	1.520	N	−17 25 12.39	+0.78
	60 07 10.28	7125.77547	1		20 41		N	−15 01 27.80	+2.99
	60 07 12.35	7127.85322	8	2	22 41 20.864	1.253		− 7 31	
	60 07 13.39	7128.88871	9	2	23 36 32.046	1.193	N	− 3 09 05.87	+4.96
465	60 08 02.01	7148.51195	8	1	15 51 22.229	1.334	N	−15 04 42.75	−4.68
	60 08 03.05	7149.55176	9	1	16 52 47.568	1.334	N	−17 19 10.67	−2.05
	60 08 08.26	7154.75944	6	2	22 12 22.819	1.373		− 9 44	
466	60 09 02.09	7179.58476	4	1	19 38 42.732	1.431	S	−17 16 54.76	+0.47
	60 09 03.13	7180.62554	6	1	20 41 33.041	1.488	S	−15 00 14.75	+3.20
	60 09 04.17	7181.66516	4	1	21 42 41.635	1.295	S	−11 41 12.82	+3.50
	60 09 06.24	7183.73981	6	2	23 38 21.966	1.240	N	− 3 10 22.78	+6.17
	60 09 07.28	7184.77504	2	2	0 33 10.873	1.158	N	+ 1 21 27.76	+5.83
	60 09 08.31	7185.80928	8	2	1 26 33.685	1.130	N	+ 5 40 57.97	+6.15
467	60 10 01.07	7208.57464	2		21 18		S	−13 08 41.84	+4.19
	60 10 02.11	7209.61223	1	1	22 16 39.156	1.234	S	− 9 27 05.92	+5.57
	60 10 03.15	7210.64855	6	1	23 13 02.250	1.197	S	− 5 12 52.03	+5.33
	60 10 04.18	7211.68379	9	1	0 07 52.130	1.191	S	− 0 43 52.97	+6.23
	60 10 05.22	7212.71824	6	2	1 01 33.481	1.180	S	+ 3 42 40.07	+5.44
	60 10 06.25	7213.75220	8	2	1 54 31.954	1.182	N	+ 7 51 35.67	+5.70
	60 10 10.39	7217.88653	9	2	5 24 16.362	1.118		+18 00	
	60 10 11.42	7218.91980	8	2	6 16 15.462	1.131	S	+18 27 34.58	−0.64
468	60 10 26.95	7234.44951	6	1	20 00 16.182	1.355	S	−16 49 07.15	+2.04
	60 11 02.16	7240.66327	4	1	1 32 34.514	1.180	S	+ 6 11 09.61	+5.35
	60 11 04.23	7242.73015	8	2	3 17 01.642	1.085	S	+13 22 05.36	+4.77
	60 11 08.36	7246.86452	6	2	6 46 49.104	1.149	S	+18 30 29.24	−2.63
	60 11 09.40	7247.89733	4	2	7 38 08.665	1.168	S	+17 35 44.54	−3.02
	60 11 11.46	7249.96126	1	2	9 18 20.261	1.091	S	+13 25 31.13	−5.11
	60 11 12.49	7250.99262	9	2	10 07 33.561	0.997	S	+10 20 23.03	−4.92
469	60 11 27.01	7265.51121	1	1	23 31 34.456	1.193	S	− 4 02 09.69	+6.57
	60 11 28.04	7266.54477	4	1	0 23 58.674	1.136	S	+ 0 22 01.21	+5.20
	60 12 01.14	7269.64320	6	1	2 57 55.817	1.187	S	+12 12 00.13	+4.29
	60 12 02.18	7270.67635	8	1	3 49 44.540	1.142	S	+15 05 00.47	+3.36
	60 12 03.21	7271.70983	9	2	4 42 01.782	1.121	S	+17 11 46.83	+2.38
	60 12 04.24	7272.74349	1	2	5 34 33.818	1.119	S	+18 26 51.39	+1.20
	60 12 06.31	7274.81019	9	2	7 18 46.011	1.114	S	+18 14 44.09	−1.04
	60 12 07.34	7275.84272	6	2	8 09 40.806	1.191	S	+16 51 08.40	−3.03
	60 12 08.37	7276.87453	3	2	8 59 33.516	1.075	S	+14 41 57.20	−3.17
470	60 12 28.06	7296.55858	6	1	2 42 11.121	1.123	S	+10 59 55.44	+4.50
	60 12 29.09	7297.59119	9		3 33		S	+14 06 33.71	+3.81
	60 12 31.16	7299.65739	3	1	5 16 42.167	1.207	S	+18 05 32.17	+1.65
	61 01 02.22	7301.72406	6	2	7 00 50.797	1.163	S	+18 36 30.41	−1.94
	61 01 04.29	7303.78905	9	2	8 42 34.501	1.092	S	+15 40 54.07	−3.86
	61 01 05.32	7304.82049	6	2	9 31 54.631	0.993	S	+13 06 59.07	−3.26
	61 01 06.35	7305.85129	2	2	10 20 19.991	1.062	S	+ 9 58 00.04	−6.47
	61 01 07.38	7306.88172	3	2	11 08 12.629	1.087	S	+ 6 21 35.92	−6.27
	61 01 09.44	7308.94312	6	2	12 44 45.614	1.066	S	− 1 42 03.01	−6.36
471	61 01 23.97	7323.47343	8	1	2 25 41.841	1.129	S	+ 9 38 33.56	+4.62
	61 01 26.04	7325.53917	9	1	4 08 30.018	1.106	S	+15 40 31.49	+2.31
	61 01 29.14	7328.63852	1	1	6 43 46.692	1.041	S	+18 42 48.13	−0.68
	61 01 30.17	7329.67141	6	1	7 35 13.088	1.118	S	+17 58 21.85	−1.10
	61 01 31.20	7330.70383	9	1	8 25 58.380	1.108	S	+16 23 59.79	−2.90
	61 02 01.24	7331.73563	2	2	9 15 50.330	1.060	S	+14 04 44.14	−4.64
	61 02 06.39	7336.88971	6	2	13 18 01.316	1.146	S	− 4 19 28.05	−6.00

MOON

Lun.	Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)
		243			h m s	s		° ′ ″	″
471	61 02 07.42	7337.92203	2	2	14 08 38.447	1.109	S	− 8 18 55.21	−4.73
	61 02 09.49	7339.99210	8	2	15 57 42.411	1.344	S	−15 06 32.01	−3.21
472	61 02 26.09	7356.58548	1		7 17		N	+18 16 43.60	−1.02
	61 02 27.12	7357.61802	2	1	8 08 30.986	1.045	N	+17 00 00.21	−1.97
	61 02 28.15	7358.65003	6	1	8 58 41.271	1.127	N	+14 56 20.77	−2.63
	61 03 03.24	7361.74332	1	2	11 25 13.131	0.998	S	+ 5 07 18.44	−4.66
	61 03 04.27	7362.77415	9	2	12 13 40.382	1.038	S	+ 1 05 34.54	−5.31
473	61 03 26.03	7384.53111	6	1	7 49 28.740	1.056	N	+17 37 59.75	−1.18
	61 03 31.19	7389.68804	4	1	11 55 47.184	1.088	N	+ 2 35 18.29	−6.38
	61 04 03.29	7392.78512	2	2	14 27 47.303	1.162	S	− 9 46 51.09	−5.70
	61 04 07.43	7396.93398	4	2	18 18 30.154	1.384	N	−18 50 41.83	−0.83
474	61 04 27.10	7416.60034	4	1	11 35 35.935	1.084	N	+ 4 22 39.79	−5.09
	61 04 30.20	7419.69679	6	1	14 06 41.579	1.210	N	− 8 15 11.70	−6.28
	61 05 03.31	7422.80701	6	2	16 57 40.940	1.464	N	−17 41 50.11	−3.17
	61 05 04.35	7423.84687	9		17 59		N	−18 54 57.79	−0.29
	61 05 05.39	7424.88730	4	2	19 01 30.260	1.406	N	−18 51 46.05	+1.53
475	61 05 24.01	7443.51255	6	1	11 15 17.359	1.061	N	+ 6 16 47.79	−6.82
	61 05 25.04	7444.54308	4	1	12 03 18.638	1.076	N	+ 2 14 38.34	−6.35
	61 05 26.07	7445.57426	8	1	12 52 16.284	1.095	N	− 1 59 45.13	−6.47
	61 05 31.26	7450.75574	6	2	17 34 02.181	1.470	N	−18 40 56.89	−1.36
	61 06 02.34	7452.83896	2	2	19 42 05.746	1.529	N	−18 20 11.06	+2.46
476	61 06 24.05	7474.54978	9		14 11		N	− 8 19 28.54	−6.64
	61 06 25.08	7475.58432	4	1	15 05 05.214	1.244	N	−12 11 26.90	−5.45
	61 06 28.20	7478.70242	6	1	18 07 26.856	1.462	N	−19 09 14.79	−0.47
	61 06 29.25	7479.74516	9	2	19 13 05.972	1.558	N	−18 59 02.72	+1.80
	61 06 30.29	7480.78774	8	2	20 18 31.585	1.550	N	−17 22 26.30	+3.51
	61 07 01.33	7481.82903	2	2	21 22 05.520	1.430	N	−14 29 18.22	+4.53
	61 07 02.37	7482.86840	1	2	22 22 52.711	1.296	N	−10 38 10.58	+6.02
	61 07 03.41	7483.90576	6	2	23 20 46.068	1.175		− 6 11	
477	61 07 23.03	7503.52885	1	1	15 35 22.498	1.257	N	−13 54 36.89	−4.74
	61 07 26.15	7506.64793	4	1	18 39 09.505	1.465	N	−19 13 13.07	−1.14
	61 07 27.19	7507.69093	8	1	19 45 10.894	1.469	N	−18 22 44.98	+2.30
	61 07 28.23	7508.73371	2	2	20 50 53.741	1.418	N	−16 06 30.21	+3.99
	61 07 29.28	7509.77520	9	2	21 54 44.828	1.420	N	−12 37 26.42	+5.84
	61 07 30.32	7510.81482	1	2	22 55 54.621	1.338	N	− 8 17 07.94	+5.95
	61 08 01.39	7512.88869	8	2	0 50 26.970	1.213	N	+ 1 21 59.18	+6.34
478	61 08 24.14	7535.63621	2		20 16		S	−17 27 18.82	+2.00
	61 08 28.30	7539.79663	8	2	0 23 58.094	1.297	N	− 0 57 26.00	+7.11
	61 08 30.37	7541.86924	6	2	2 16 42.215	1.241	N	+ 8 30 17.66	+5.99
479	61 09 22.12	7564.62338	6	1	21 52 22.639	1.435	S	−12 48 16.48	+4.12
	61 09 23.16	7565.66297	9	1	22 53 28.495	1.390	S	− 8 29 24.75	+5.76
	61 09 24.20	7566.70156	1	1	23 53 08.272	1.326	S	− 3 35 43.50	+7.00
	61 09 25.24	7567.73925	6	2	0 51 30.339	1.304	N	+ 1 29 05.03	+7.51
	61 09 27.31	7569.81284	2	2	2 45 39.003	1.228	N	+10 44 13.10	+6.07
	61 09 28.35	7570.84910	8	2	3 41 57.594	1.295	N	+14 20 18.84	+4.98
	61 09 30.42	7572.92062	2	2	5 33 06.820	1.161		+18 40	
480	61 10 16.95	7589.45368	1	1	19 25 53.752	1.438	S	−18 59 59.84	−0.01
	61 10 17.99	7590.49315	6	1	20 26 50.175	1.380	S	−17 18 58.36	+2.67
	61 10 19.03	7591.53231	8	1	21 27 19.097	1.395	S	−14 27 18.23	+4.93
	61 10 20.07	7592.57079	3	1	22 26 49.929	1.346	S	−10 36 04.90	+6.87
	61 10 23.18	7595.68243	2	1	1 19 51.336	1.212	S	+ 3 57 29.24	+6.70
	61 10 24.22	7596.71912	8	2	2 16 46.266	1.297	S	+ 8 40 02.50	+6.96
	61 10 25.26	7597.75587	6	2	3 13 46.722	1.240	S	+12 45 47.42	+5.25
	61 10 27.33	7599.82931	2	2	5 07 42.942	1.245		+18 13	
	61 10 28.37	7600.86547	9	2	6 03 51.902	1.248	S	+19 22 19.34	−0.39
	61 10 29.40	7601.90077	1	2	6 58 46.660	1.203	S	+19 27 01.01	−1.10
	61 10 30.44	7602.93493	6	2	7 52 03.000	1.211	S	+18 32 23.65	−2.82

MOON

Lun.	Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)
		243			h m s	s		° ′ ″	″
480	61 10 31.47	7603.96784	8		8 43		S	+16 45 20.58	-4.06
481	61 11 15.98	7619.48381	8	1	22 07 41.219	1.334	S	-12 11 38.93	+6.02
	61 11 18.06	7621.55672	9	1	0 00 50.626	1.272	S	- 3 10 10.27	+5.49
	61 11 19.09	7622.59234	6	1	0 56 12.964	1.287	S	+ 1 45 49.26	+6.90
	61 11 21.16	7624.66385	1	1	2 47 21.311	1.267	S	+10 57 19.21	+5.36
	61 11 22.20	7625.70021	1	1	3 43 48.287	1.262	S	+14 38 43.85	+4.26
	61 11 25.31	7628.80994	9	2	6 34 04.465	1.254		+19 45	
	61 11 26.35	7629.84524	1	2	7 28 59.738	1.175	S	+19 17 39.71	-1.77
	61 11 28.41	7631.91183	9	2	9 13 01.210	1.066	S	+15 37 35.76	-4.03
	61 11 29.44	7632.94311	2		10 02		S	+12 42 27.17	-5.08
	61 11 30.47	7633.97338	8	2	10 49 47.522	1.061	S	+ 9 15 29.82	-5.87
482	61 12 13.94	7647.43560	8	1	22 48 27.789	1.311	S	- 9 29 27.99	+6.33
	61 12 16.01	7649.50675	6	1	0 39 05.068	1.297	S	- 0 00 17.43	+6.83
	61 12 19.11	7652.61137	9	1	3 21 58.791	1.292	S	+13 13 30.48	+5.31
	61 12 22.22	7655.71956	6	2	6 10 01.884	1.311	S	+19 41 36.25	-0.76
	61 12 23.26	7656.75534	9	2	7 05 38.100	1.184	S	+19 43 58.48	-0.76
	61 12 25.32	7658.82362	6	2	8 52 06.400	1.256	S	+16 50 31.33	-4.83
	61 12 29.45	7662.94564	8	2	12 04 04.176	1.017	S	+ 3 15 57.36	-5.12
	61 12 30.48	7663.97505	2	2	12 50 28.863	1.013		- 0 53	
483	62 01 11.92	7676.42152	3	1	0 22 27.713	1.313	S	- 1 41 55.65	+7.21
	62 01 12.96	7677.45669	2	1	1 17 11.678	1.196	S	+ 3 12 46.44	+6.17
	62 01 13.99	7678.49138	1	1	2 11 13.499	1.211	S	+ 7 50 29.99	+6.48
	62 01 15.03	7679.52605	9	1	3 05 13.989	1.251	S	+11 57 03.80	+4.68
	62 01 16.06	7680.56102	6	1	3 59 40.160	1.133	S	+15 20 31.11	+2.22
	62 01 17.10	7681.59638	1	1	4 54 40.269	1.284	S	+17 51 08.52	+1.89
	62 01 18.13	7682.63197	6	1	5 50 00.277	1.258	S	+19 21 53.86	+0.16
	62 01 24.33	7688.83035	6	2	11 00 06.398	1.076	S	+ 8 48 06.08	-5.45
	62 01 25.36	7689.85981	9	2	11 46 34.774	1.050	S	+ 4 55 28.44	-6.52
484	62 02 10.94	7706.44017	1	1	2 47 40.871	1.293	S	+10 37 46.06	+5.50
	62 02 16.12	7711.61642	8	1	7 21 52.738	1.271*	N	+19 31 35.38	-0.55
	62 02 18.18	7713.68307	1	1	9 06 00.625	1.134	N	+16 14 16.40	-3.79
	62 02 20.25	7715.74527	8	2	10 43 41.785	1.139	S	+10 04 06.04	-7.33
	62 02 25.39	7720.89341	1	2	14 37 19.066	1.085	S	- 9 53 00.30	-4.68
485	62 03 12.96	7736.45969	9	1	5 14 07.765	1.286	S	+18 33 33.53	+2.36
	62 03 13.99	7737.49563	6	1	6 09 58.723	1.281		+19 42	
	62 03 15.03	7738.53084	8	1	7 04 45.556	1.210	N	+19 47 44.23	-0.10
	62 03 16.07	7739.56505	1	1	7 58 05.682	1.212	N	+18 52 11.42	-1.82
	62 03 18.13	7741.62992	1	1	9 39 39.333	1.099	N	+14 27 22.58	-4.53
	62 03 19.16	7742.66068	6	1	10 28 00.151	1.038	N	+11 14 47.50	-4.72
	62 03 23.28	7746.77867	6	2	13 34 08.807	1.032	S	- 4 46 01.06	-5.56
	62 03 24.31	7747.80888	9	2	14 21 42.741	1.061	S	- 8 46 58.01	-4.94
	62 03 25.34	7748.84023	1	2	15 10 55.220	1.091	S	-12 28 03.82	-3.40
	62 03 27.41	7750.90770	8	2	16 56 14.145	1.253		-18 04	
	62 03 29.48	7752.98218	9	2	18 51 39.944	1.434	N	-19 59 11.61	-1.50
486	62 04 15.08	7769.57578	1	1	10 11 52.257	1.049	N	+12 32 00.06	-5.30
	62 04 16.11	7770.60589	2	1	10 59 16.994	1.067	N	+ 8 57 58.60	-6.23
	62 04 17.14	7771.63534	8	1	11 45 45.140	1.014	N	+ 5 01 30.21	-7.12
	62 04 19.19	7773.69402	2	1	13 18 22.072	1.072	N	- 3 23 31.24	-7.52
	62 04 21.26	7775.75537	9	2	14 54 49.872	1.163	N	-11 26 33.81	-4.47
	62 04 22.29	7776.78802	6	2	15 45 55.714	1.307		-14 51	
	62 04 23.32	7777.82232	9	2	16 39 24.069	1.264		-17 36	
	62 04 24.36	7778.85828	8	2	17 35 15.632	1.350		-19 27	
	62 04 25.40	7779.89563	1	2	18 33 08.623	1.218		-20 13	
	62 04 26.43	7780.93392	8	2	19 32 22.255	1.261		-19 47	
487	62 05 11.99	7796.48962	9	1	9 53 54.401	1.133	N	+13 59 18.96	-5.05
	62 05 15.08	7799.57911	8	1	12 14 57.211	1.030	N	+ 2 34 25.67	-6.11
	62 05 17.14	7801.63819	2	1	13 48 08.178	1.066	N	- 5 57 49.81	-7.41
	62 05 18.17	7802.66909	8	1	14 36 42.040	1.192	N	-10 02 46.74	-6.29
	62 05 19.20	7803.70149	9	1	15 27 25.753	1.104	N	-13 44 54.38	-4.77

MOON

Lun.	Date	J.E.D.	O	L	Obs. R.A.	(O–C)	L	Obs. Decl.	(O–C)
		243			h m s	s		° ′ ″	″
487	62 05 20.24	7804.73567	1	2	16 20 44.023	1.239	N	−16 50 42.88	−4.52
	62 05 21.27	7805.77168	6	2	17 16 40.367	1.296	N	−19 05 57.36	−3.16
	62 05 22.31	7806.80925	8	2	18 14 51.811	1.341	N	−20 17 35.58	−1.03
488	62 06 16.15	7831.64667	6	1	15 58 40.350	1.190	N	−15 37 20.83	−3.94
	62 06 17.18	7832.68229	1	1	16 54 02.501	1.238	N	−18 18 57.70	−3.49
	62 06 18.22	7833.71991	2	2	17 52 18.152	1.330	N	−20 01 13.23	−1.96
	62 06 19.26	7834.75902	4	2	18 52 43.491	1.507	N	−20 31 08.81	−0.36
	62 06 22.38	7837.87687	9	2	21 54 43.119	1.367	N	−14 16 08.01	+4.85
489	62 07 10.99	7856.49389	0	1	13 56 37.288	1.099	N	− 6 24 18.80	−8.34
	62 07 12.02	7857.52444	6	1	14 44 41.293	1.246	N	−10 25 51.30	−5.60
	62 07 13.06	7858.55667	8	1	15 35 09.779	1.160	N	−14 04 48.81	−4.91
	62 07 14.09	7859.59101	4	1	16 28 41.528	1.244	N	−17 08 03.35	−4.83
	62 07 19.29	7864.78741	6	2	21 32 00.324	1.410		−15 43	
	62 07 20.33	7865.82638	2	2	22 32 12.891	1.320		−11 44	
	62 07 21.36	7866.86397	4	2	23 30 26.267	1.352	N	− 7 00 23.13	+7.02
490	62 08 12.07	7888.57250	1	1	17 56 18.490	1.331	N	−20 03 08.39	−2.04
	62 08 13.11	7889.61167	0	1	18 56 48.394	1.449	S	−20 29 51.40	+0.83
	62 08 15.19	7891.69308	8	1	21 02 14.320	1.421	S	−17 16 30.44	+3.89
	62 08 16.23	7892.73348	4	2	22 04 30.893	1.443	S	−13 41 45.81	+5.84
	62 08 19.35	7895.84817	1	2	1 01 57.028	1.324	N	+ 1 24 01.64	+7.31
	62 08 20.39	7896.88480	6	2	1 58 46.712	1.335	N	+ 6 35 03.26	+7.59
	62 08 21.42	7897.92127	8	2	2 55 23.084	1.306	N	+11 15 25.46	+5.68

TABLE I, - LUNATION MEANS OF ΔT

Lunation	ΔT	P.E.	Lunation	ΔT	P.E.
409	29^{s}.95	0^{s}.33	453	31^{s}.08	0^{s}.16
410	30.13	0.37	454	31.48	0.17
411	30.43	0.45	455	31.09	0.27
415	31.50	1.12	456	31.76	0.27
416	30.61	0.53	457	31.28	0.22
417	29.95	0.23	458	31.10	0.21
418	29.78	0.43	459	31.71	0.46
419	30.20	0.38	460	31.72	0.17
420	30.77	0.59	461	32.28	0.36
421	30.74	0.22	462	32.10	0.42
422	30.04	0.37	463	31.98	0.38
423	30.41	0.14	464	31.72	0.26
424	31.34	0.17	465	31.94	0.56
425	30.32	0.42	466	31.83	0.37
426	29.69	0.31	467	31.39	0.14
427	29.81	0.33	468	31.60	0.32
428	30.84	0.23	469	31.79	0.26
429	30.09	0.61	470	31.98	0.30
430	30.46	0.30	471	31.46	0.30
431	30.07	0.11	472	30.52	0.37
432	30.80	0.38	473	31.67	0.42
433	30.67	0.32	474	33.10	0.37
434	31.15	0.17.	475	33.16	0.30
435	32.18	1.13	476	32.64	0.39
436	31.85	0.33	477	32.02	0.12
437	33.21	-	478	32.28	0.51
438	30.75	0.54	479	32.37	0.24
439	31.42	0.28	480	32.51	0.22
442	30.44	0.64	481	32.38	0.20
443	31.58	0.30	482	33.09	0.39
444	30.93	0.39	483	32.48	0.33
445	31.25	0.28	484	33.49	0.45
446	30.42	0.32	485	32.41	0.22
447	31.50	0.37	486	32.72	0.40
448	31.70	0.29	487	32.83	0.28
449	32.02	0.33	488	32.84	0.49
450	32.35	0.21	489	33.52	0.38
451	31.68	0.36	490	33.23	0.17
452	31.28	0.26			

TABLE II, - ANNUAL MEANS OF ΔT

Year	ΔT	P.E.	Year	ΔT	P.E.
1956	30^{s}.24	0^{s}.08	1960	31^{s}.76	0^{s}.06
1957	30.39	0.09	1961	32.31	0.12
1958	31.17	0.11	1962	32.88	0.10
1959	31.45	0.10			